ALIMAK APF
Technical Description
& Instruction Manual

This manual is only applicable if the manufacturing number indicated below corresponds to the manufacturing number stamped on the identification sign of the equipment. Where there is a conflict contact Your ALIMAK representative.

Manufacturing No.: **Year:** DRAFT
2001 - 03 - 29

If the bottom right corner of this book is cut, the book is only valid for illustrative use!

Photographs and drawings are illustrative only and do not necessarily show the design of the products on the market at any given point in time. The products must be used in conformity with applicable practice and safety regulations. Specifications of the products and equipment presented herein are subject to change without notice.

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ALIMAK AB IS ISO 9001 CERTIFIED

ISO 9001 is an international Quality Assurance Standard, which provides the parameters for ***Quality Assurance Systems***. The standard states how the organization of a company, working methods, etc., shall function in order to attain the intended quality of products and related services.

Alimak AB, innovators in rack and pinion driven hoists and lifts, is the first hoist and lift manufacturer, using this technology, to have achieved ISO 9001 certification.

The Certificate is valid for:

Design, Manufacture and Service related to Construction Hoists, Mast Climbing Work Platforms, Lifts,Elevators, and Equipment for Drilling and Enlarging of Shafts.

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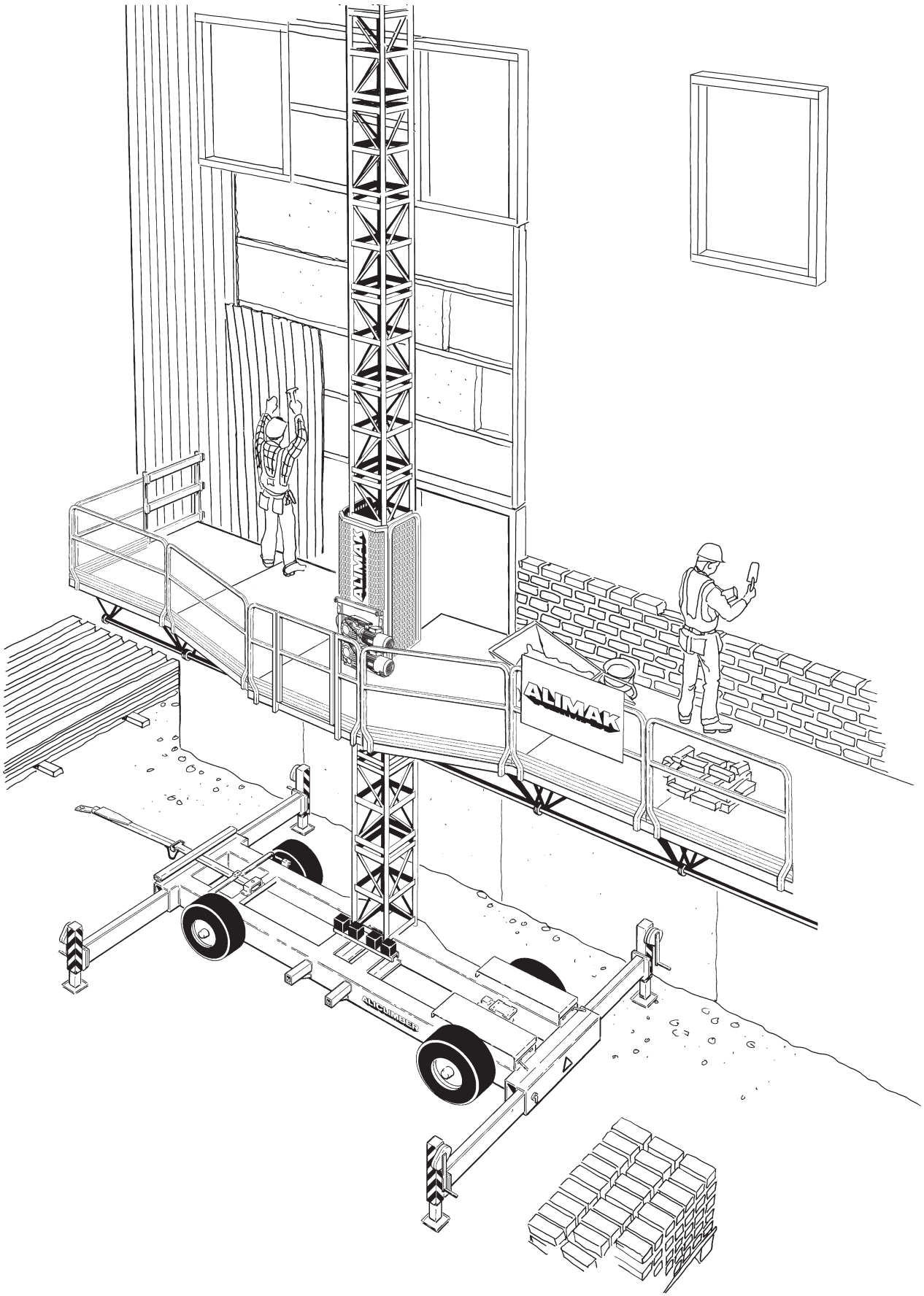


For lifting heights up to 100 m (330 ft.)

Where required lifting height exceeds the maximum allowed mast heights, we request that you to contact ALIMAK´s Calculation Department for advice.

Technical description

Applications

The Aliclimber APF-50 System is designed for the following applications:

– To carry personnel and materials efficiently and economically.

– To improve accessibility to difficult to reach areas.

– To be easily erected, dismantled, serviced, and moved about on the job site, while still maintaining high safety standards.

– To comply with applicable regulations.

Typical applications are:

– Traditional construction work such as wall repairs, plastering, and glazing.

– Bricklaying.

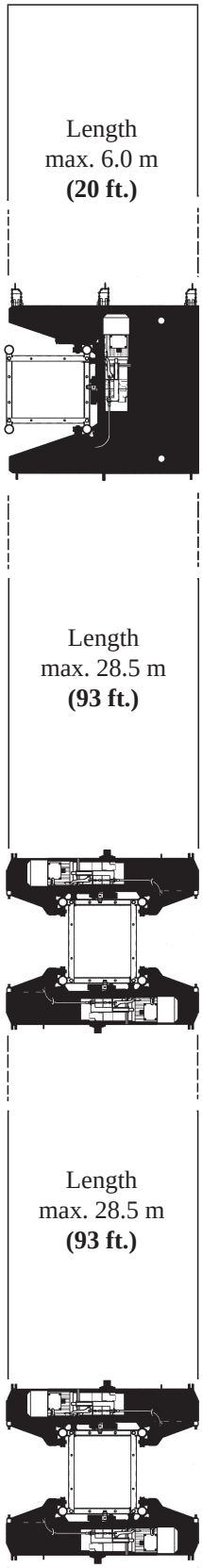
– Refurbishment work such as building fronts, roofs, gutters, wall cladding, and window replacement.

– Fixing cladding and sealing joints on industrial and prefabricated structures.

– Finish work such as touch up and installing insulation.

– Installing windows and railings.

Example:

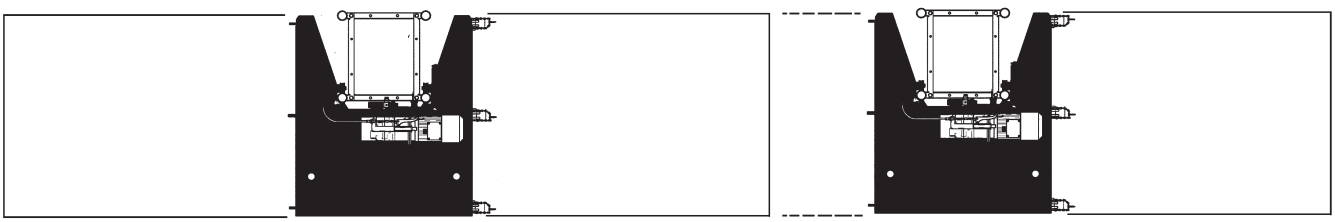


System description

The Aliclimber APF-50 System is a concept consisting of modules and accessories for work and materials platforms. Two different drive units are available from which the following combinations can be attained:

Mast Climbing Work Platform **APF - 50A,** with drive unit **type A** for single or twin mast installations.

Single
length 4.4 – 19.4 m
(14.5 ft. – 64 ft.)



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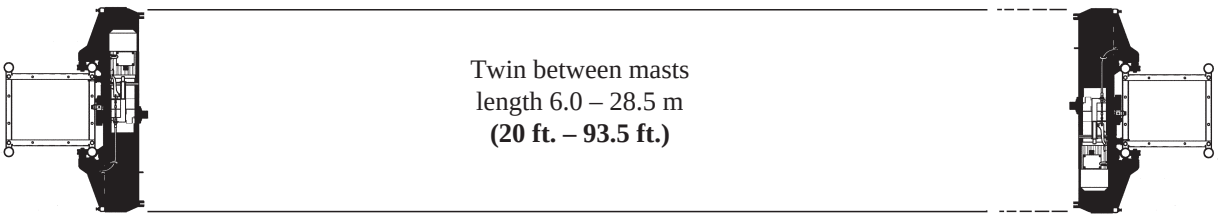
Twin
length 11.8 – 43.3
m **(39 ft. – 142 ft.)**

Mast Climbing Work Platform **APF - 50B,** with drive unit **type B** for twin mast installations.



Twin between masts
length 6.0 – 28.5 m
(20 ft. – 93.5 ft.)

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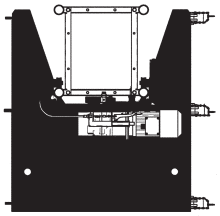
The drive unit type A travels on 2 corner tubes of the mast and occupies 3 of the 4 sides. The type A drive unit is mainly intended for traditional mast climbing work platforms in single or twin mast installations.
The drive unit has a low profile and is compact.

Drive unit type A



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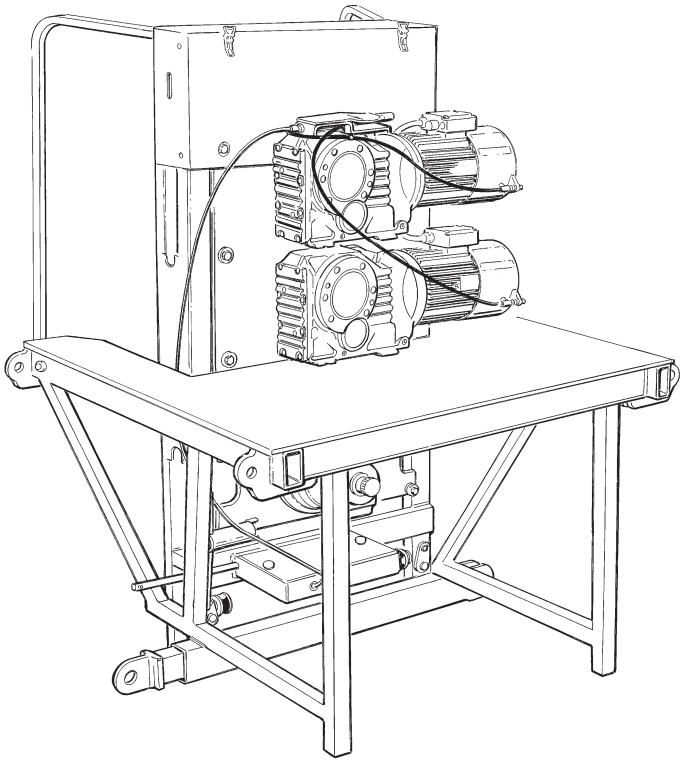
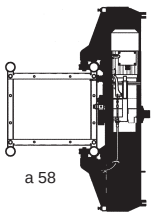


Drive unit type B has a low profile and is compact. It is intended to be used for twin mast installations.
The drive unit travels on 2 corner tubes of the mast and occupies only one side of the mast. With this type of drive unit, two individual machines can be driven on the same mast.



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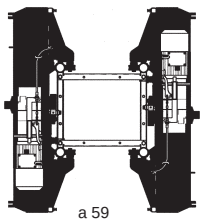
Drive unit type B



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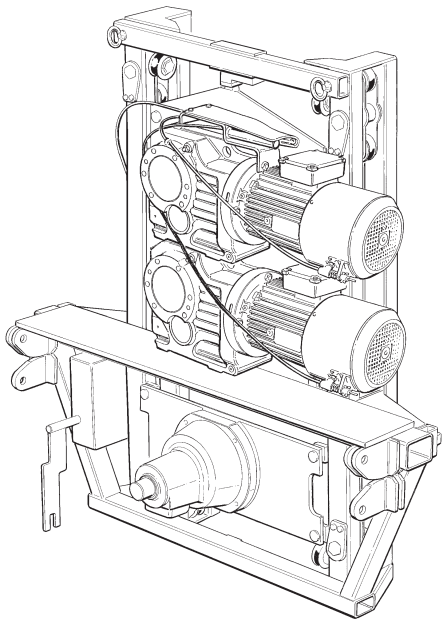
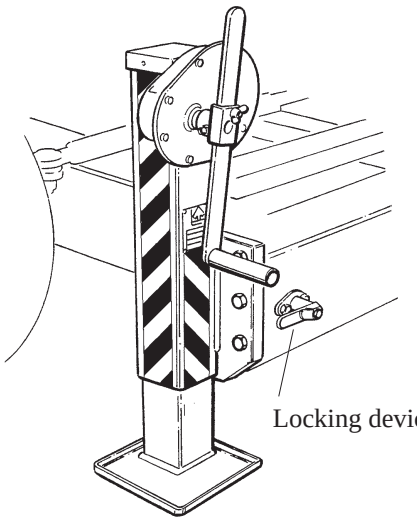


The Aliclimber APF-50 System Platforms consists of the following components:



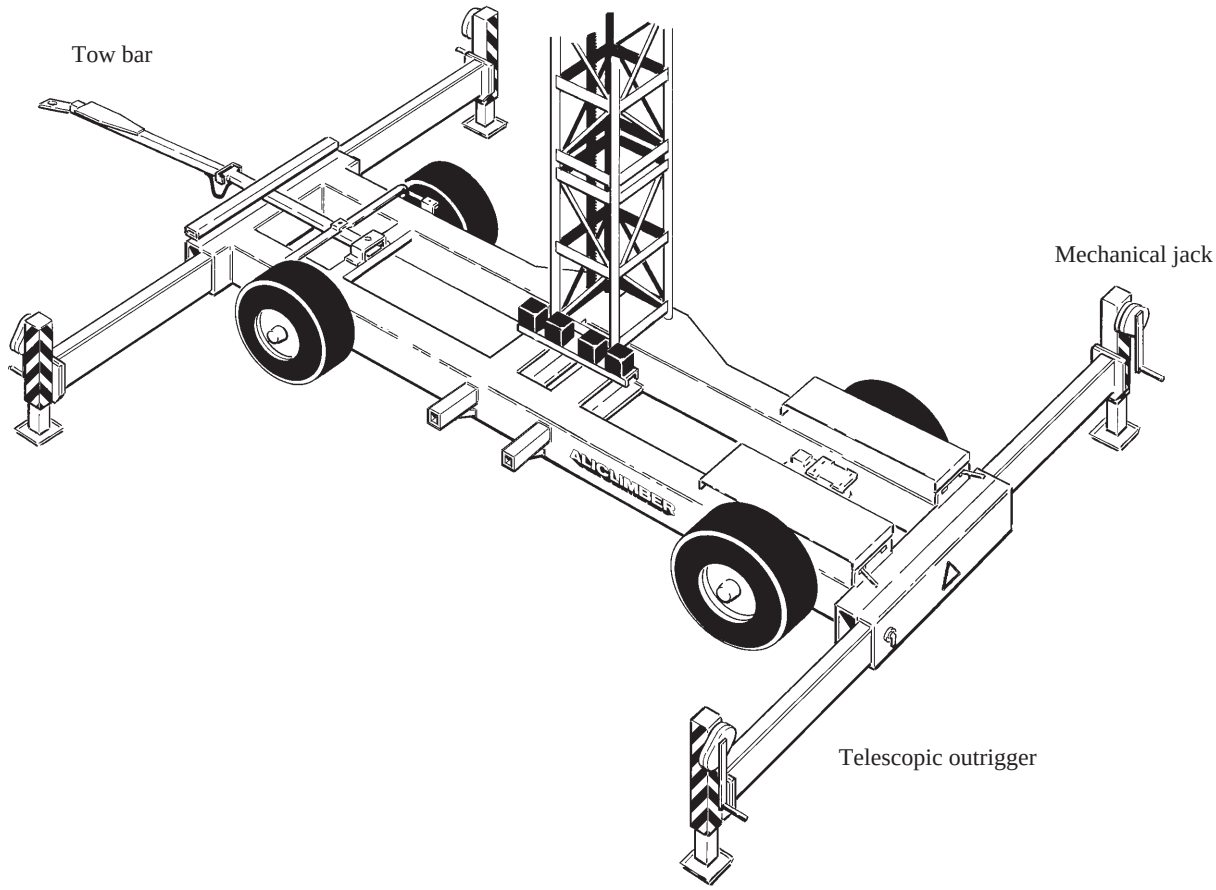
Mobile chassis

The base unit is normally delivered on a rubber wheeled mobile chassis with or without optional horizontal drive equipment for two of the wheels.

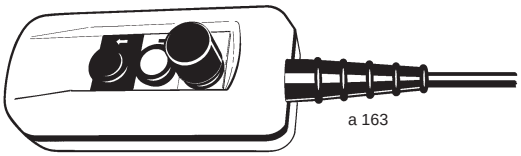
The chassis is constructed of steel profiles and is equipped with four telescopic outriggers and mechanical jacks to level and stabilize the work platform.

Tall free standing heights can be achieved due in part to the mast sections' strength and the rigidity of the chassis.
The chassis is equipped with brackets for a stair assembly.

The chassis is equipped with "Ackerman" steering at the front end and along with the tow bar makes it easy to manually steer the work platform on the job site.



The tow bar on the optional self propelled chassis is equipped with a push button box for horizontal movement.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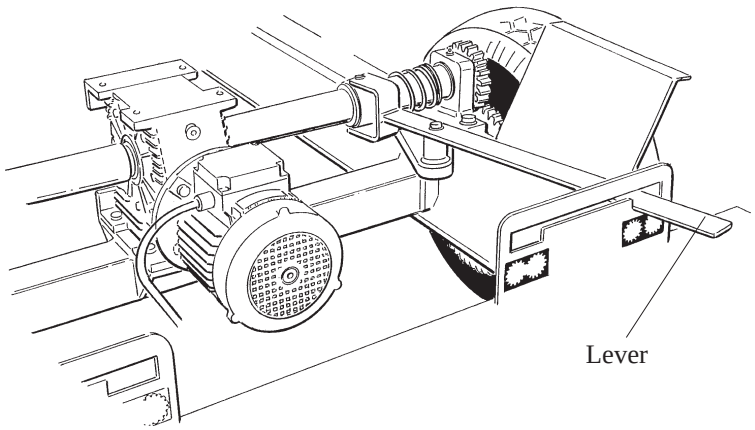
The chassis rear wheels are individually engaged to the horizontal drive machinery by means of a lever located near the wheels. This is particularly useful when negotiating curves.

Horizontal travel speed:	13 m/min. **(42 ft. min.)**
Rated motor power:	1.5 kW / 50Hz or **1.75 kW / 60Hz**
Maximum incline / decline:	5° – 6°



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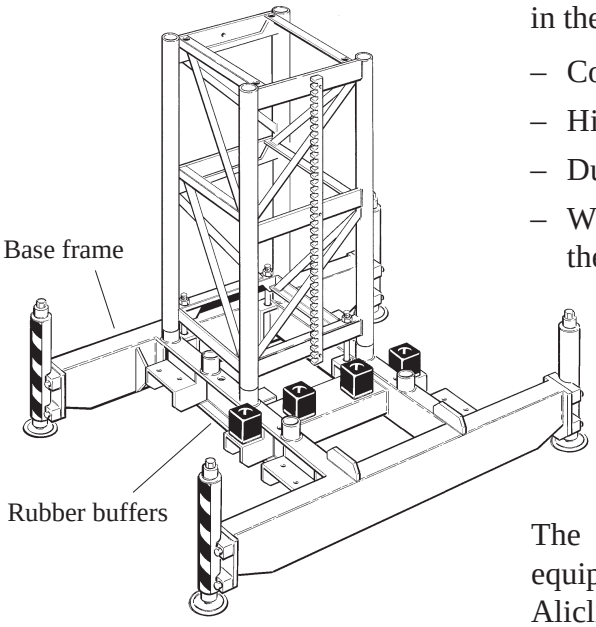
Pedestal base

The pedestal base should be used in place of the mobile chassis in the following conditions:

– Confined areas.
– High lifting heights.
– During longer construction periods.
– Where weight is of consideration, i.e. the structure bearing the Aliclimber can only take limited bearing loads.

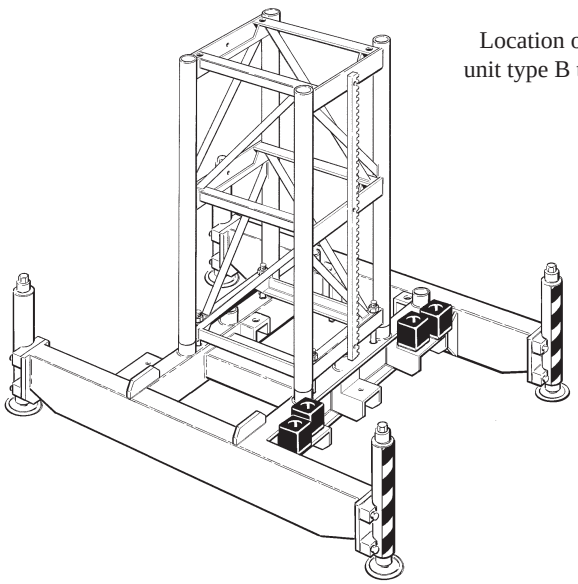


Location of mast section and buffers for drive unit type A

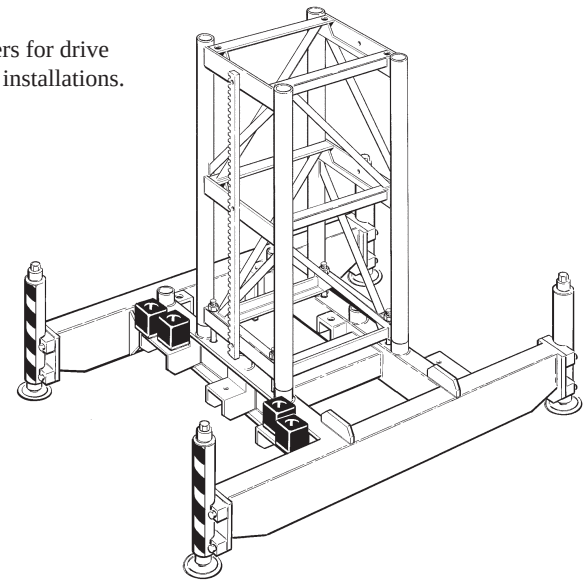
The pedestal base is constructed of steel profiles and is equipped with four manual jacks to level and stabilize the Aliclimber.

Rubber buffers are located on the base frame and are there in order to absorb shock during transport. They also serve to absorb shock should the system brakes malfunction.

Free standing Aliclimbers must NEVER be used with a pedestal base.



Location of mast section and buffers for drive unit type B to be used for twin mast installations.



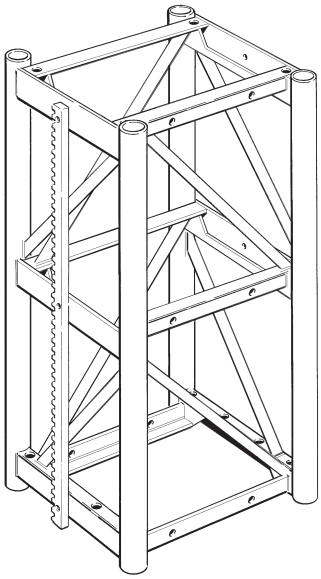
When the Aliclimber pedestal base is to be used the bottom mast section must include a rack.

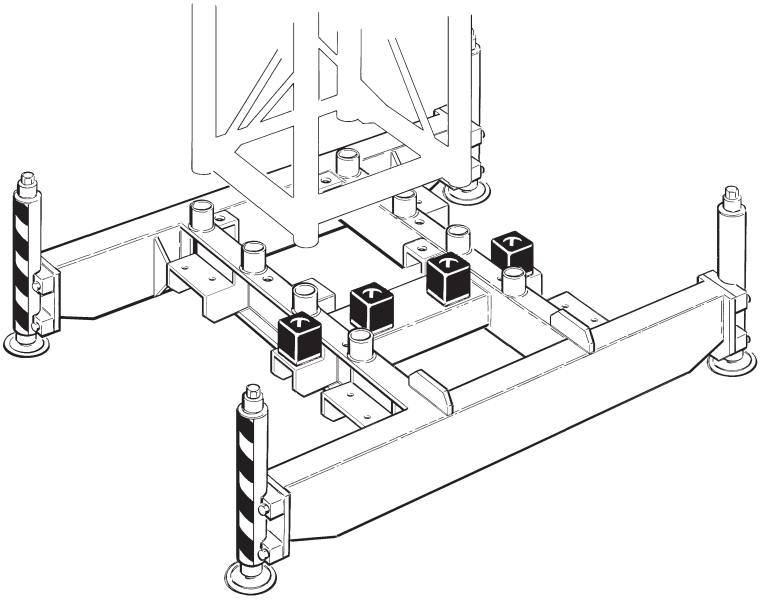
Mast

The mast comes in lengths of 1508 mm **(4 ft. 11 3/8 in.)** and is bolted together to form a mast tower of desired length.

Each mast is equipped with ***one or two*** boltable, precision cut racks of module 5. The rack is made of special steel and designed to withstand the forces applied to it.

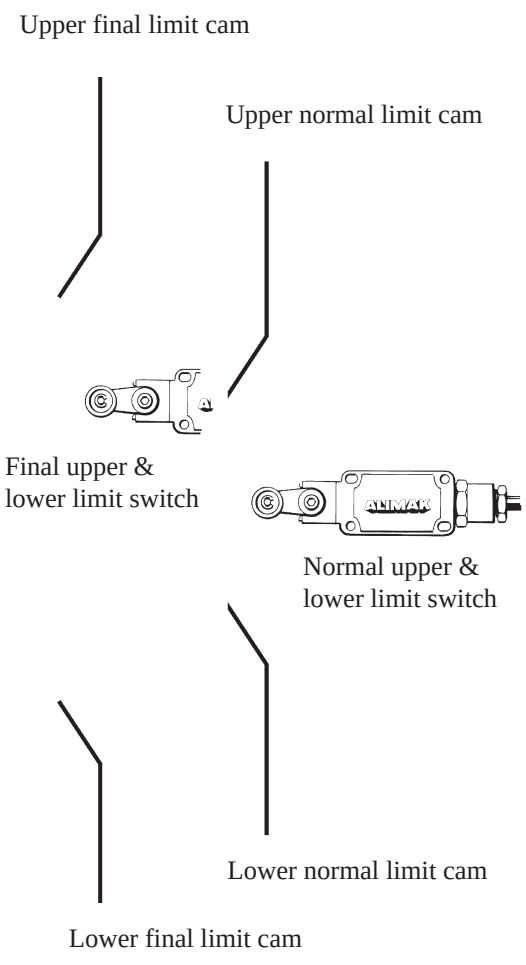
All mast sections come galvanized with the exception of the rack.



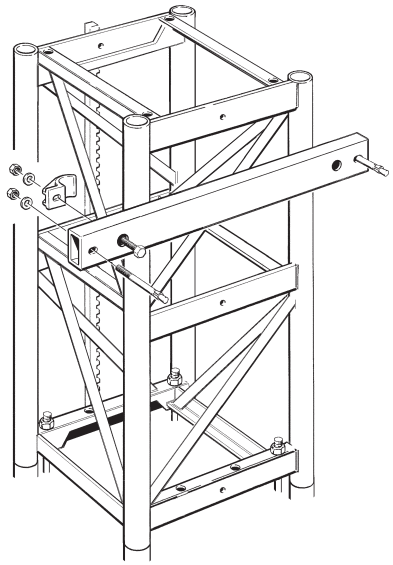


Up and down limit cams are located at the top and bottom of the mast and act on the normal limit switches located on the platform. These provide safe and automatic stopping at the normal terminal positions of the platform.

Additional protection is provided by means of a final limit switch with its cams located a minimum prescribed distance above and below the normal limit positions. Activation of this switch removes power to the platform should some fault occur with the normal switches.



Mast ties come in four different types and are used to tie the mast tower to the structure:



Mast tie type R0A

The tie is preferably intended for single and twin mast installations with drive unit **type A**. The tie can also be used with drive unit **type B** – ***but in single mast installations only!***

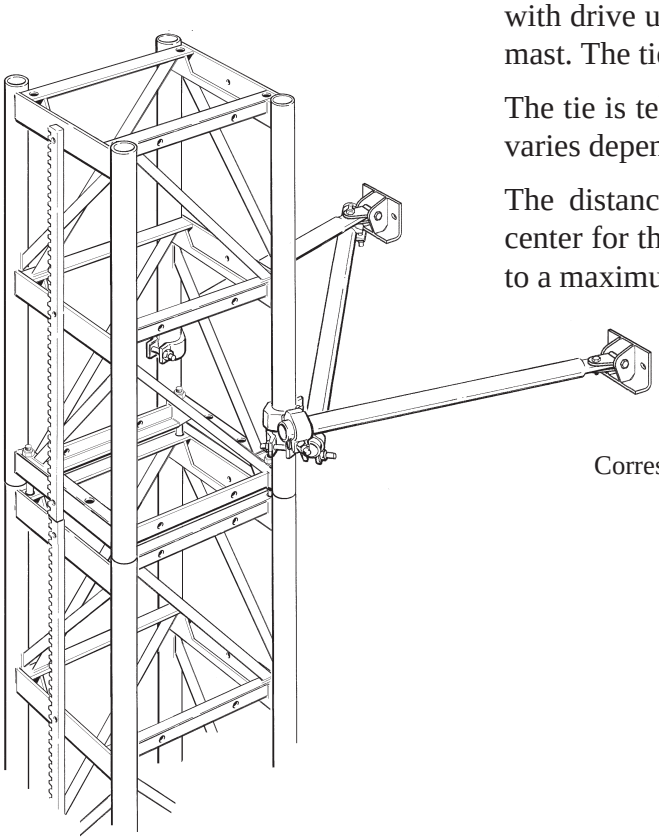
The mast tower is clamped to the wall with a mast clamp.
By a suitable space between the clamps and the mast tubes, the mast tower is free for thermal expansion.

Mast tie type R2A

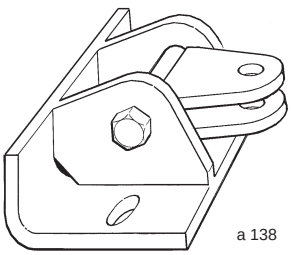
The tie is preferably intended for single and twin mast installations with drive unit **type A**. The tie can also be used with drive unit **type B** – but only with a single drive unit on the mast. The tie is designed to take mast torsional stresses.

The tie is telescopic variable in vertical direction. The tie width varies depending upon chosen length of the tie tubes.

The distance between the face of the structure and the mast center for this tie type is a minimum of 800 mm **(2 ft. 7-1/2 in.)** to a maximum of 2200 mm **(6 ft. 4-5/8 in.)** .



Corresponding tie bracket can be installed either on vault...



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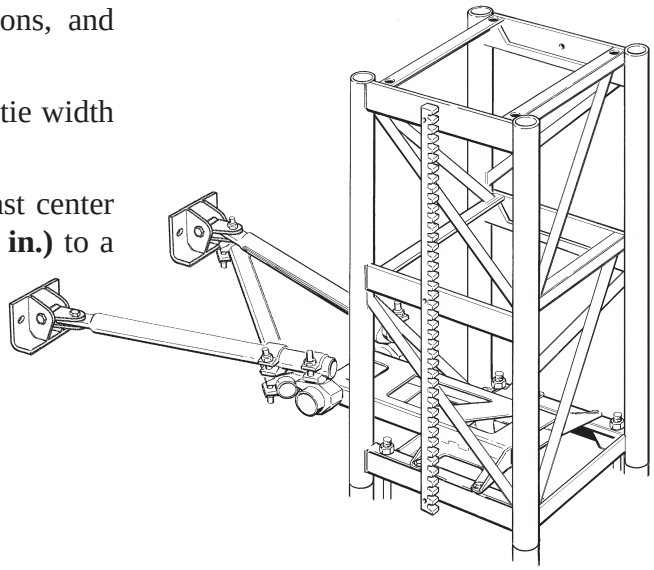
Mast tie type S2A

– to be used with drive unit Type B only!

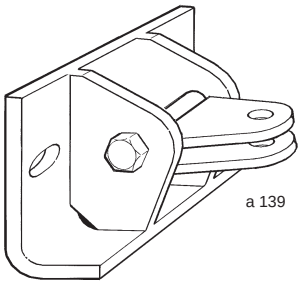
This tie is used for single or twin masted installations, and designed to take up the torsional stresses of the mast.

The tie is telescopic variable in vertical direction. The tie width varies depending upon chosen length of the tie.

The distance between the face of structure and the mast center for this tie type is a minimum of 800 mm **(2 ft. 7-1/2 in.)** to a maximum of 2950 mm **(9 ft. 8-1/8 in.)**.



... or against face of structure.



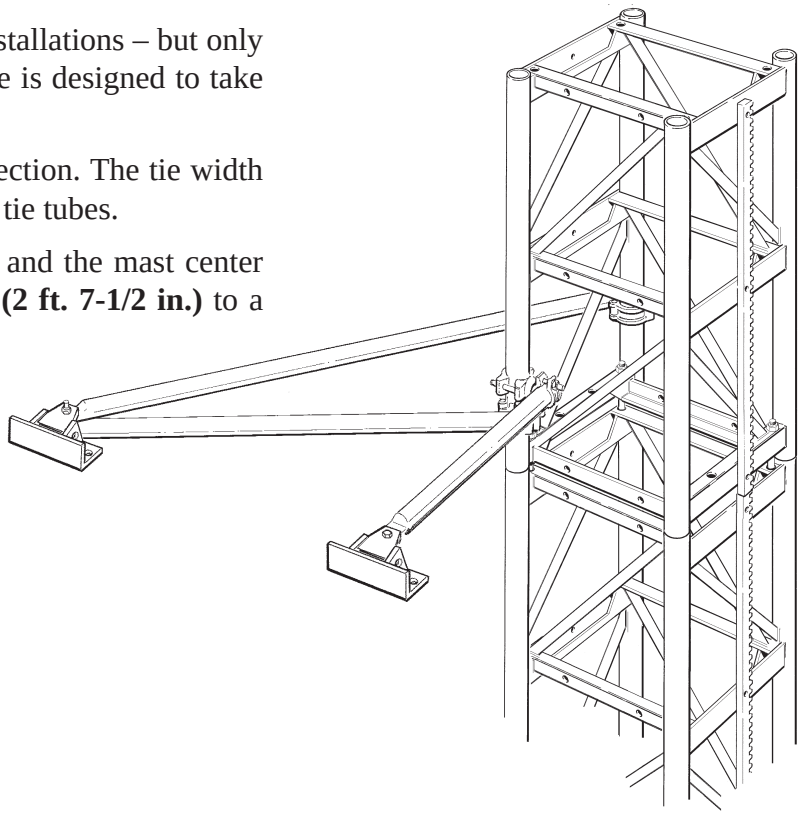
Mast tie type S4A

– to be used with drive unit Type B only!

This tie is used for single or twin masted installations – but only with a single drive unit on the mast. The tie is designed to take mast torsional stresses.

The tie is telescopic variable in vertical direction. The tie width varies depending upon chosen length of the tie tubes.

The distance between the face of structure and the mast center for this tie type is a minimum of 800 mm **(2 ft. 7-1/2 in.)** to a maximum of 2200 mm **(6 ft. 4-5/8 in.)**.



Drive unit

A steel box section braced frame forms the main structure for the drive unit. All the drive components, safety gear, drive gears, guide rollers, limit switches, are attached. The platforms are pinned to this unit.

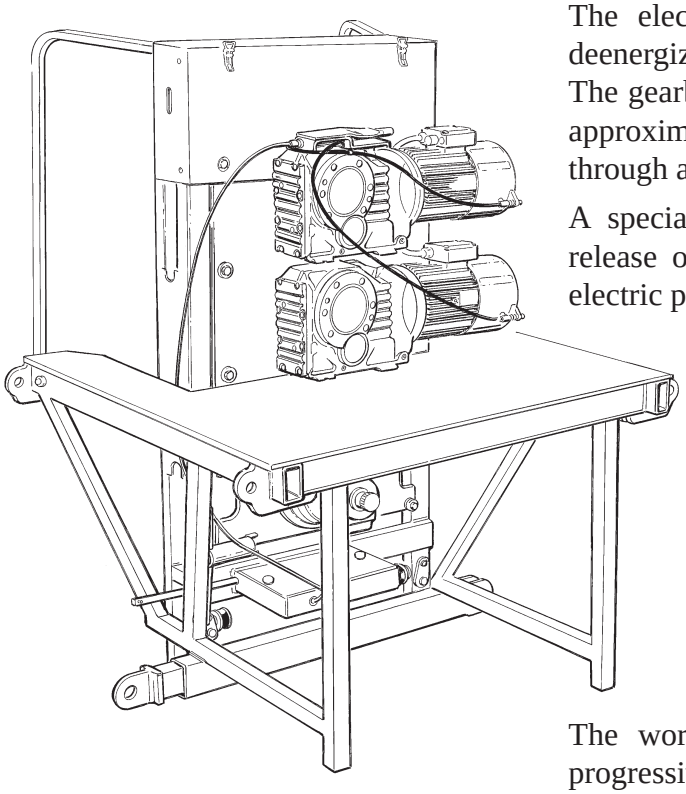
Both type A and type B drive units have the same 4 kW rated brake motor driving a helical bevel gearbox.

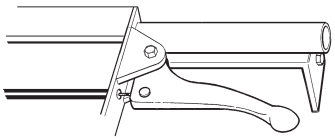
The electromagnetic motor brake is spring activated when deenergized.

The gearbox ratio results in a platform speed (up and down) of approximately 12 m/min. **(39 fpm).** They move the platform through a module 5 pinion engaging the mast rack.

A special handle at the platform deck level permits manual release of the brake for emergency lowering in the event of electric power failure.

Drive unit type A



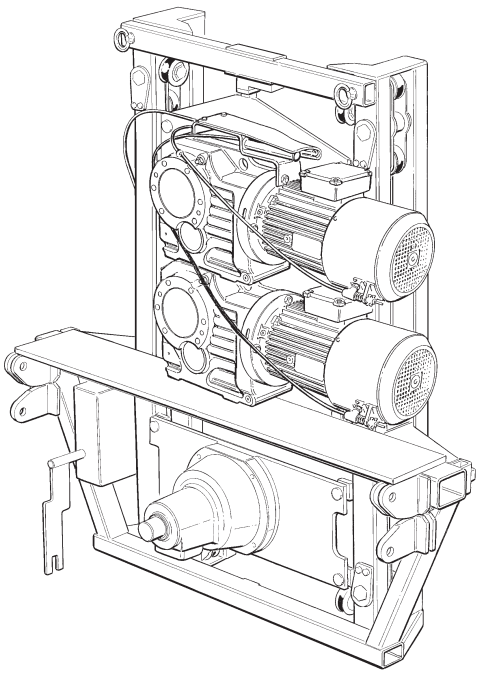


Brake release handle

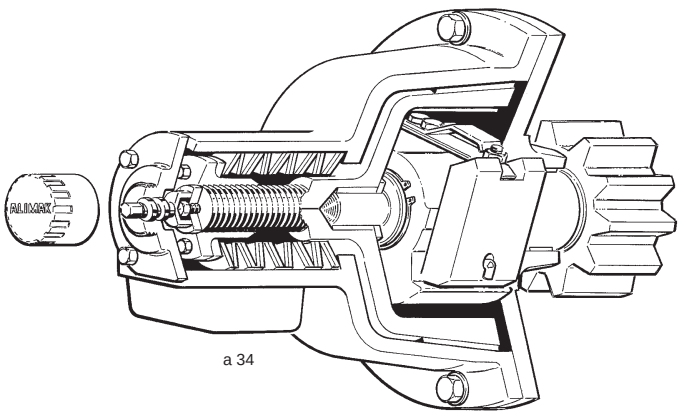
The work platform has an overspeed safety device which progressively stops the platform on the mast should normal driving speed be exceeded by a preset amount.

The safety device has a shaft with a centrifugal weight and a pinion constantly engaged with the rack on mast. When the centrifugal weight actuates, the brake cone is screwed in against a brake a lining inside the safety housing. The platform is brought to a smooth stop and simultaneously the power to the drive motors is cut off.

A counter roller fitted to the safety device mounting plate, ensures correct meshing of the pinion at all time. A safety hook provides additional safe in case of failure of the counter roller.



Drive unit type B



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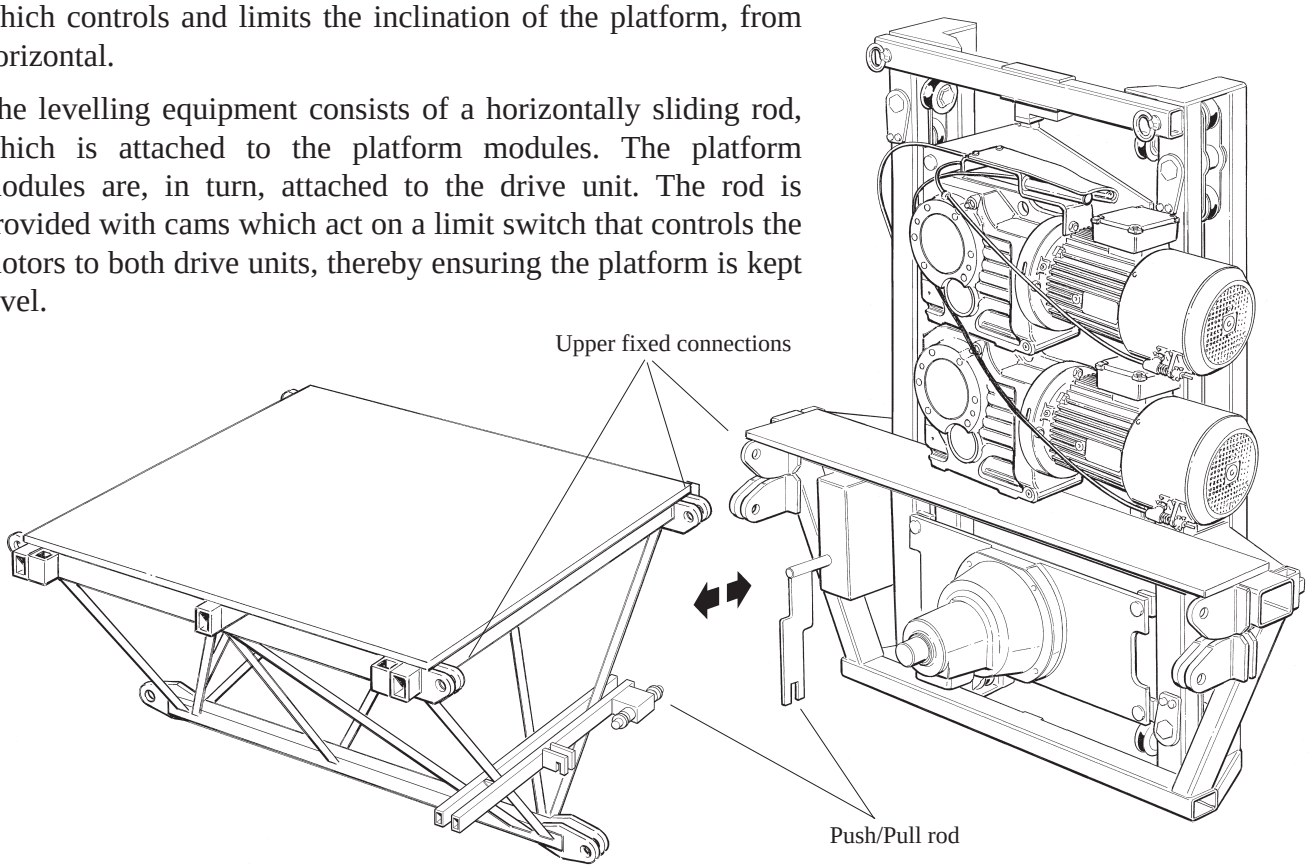
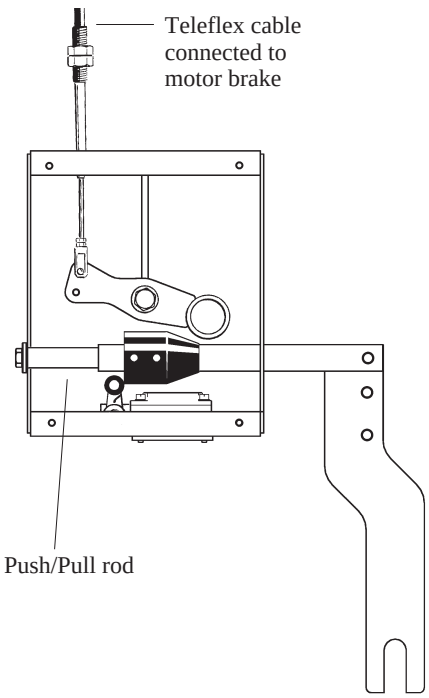
When the platform is used in the twin configuration, the drive unit is provided with electro-mechanical levelling equipment which controls and limits the inclination of the platform, from horizontal.

The levelling equipment consists of a horizontally sliding rod, which is attached to the platform modules. The platform modules are, in turn, attached to the drive unit. The rod is provided with cams which act on a limit switch that controls the motors to both drive units, thereby ensuring the platform is kept level.

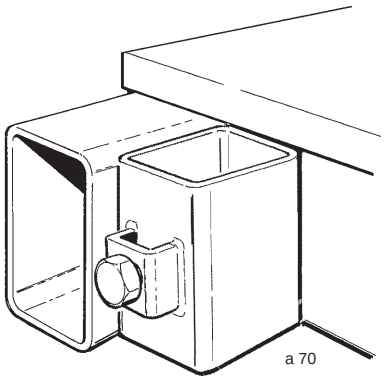


The same rod is also provided with a cam that acts on a mechanical arm, which by a teleflex cable, makes manual lifting of the brakes impossible if the platform angle towards the horizontal plane is too large. This brake sliding control makes it possible to safely slide down to ground level should an emergency situation occur, i.e. power failure.



Different lengths or work platform sections of 1.5 m **(4 ft. 11 in.)** or 0.82 m **(2 ft. 8 in.)**, with associated railings and gates, can be attached to the drive unit. This makes it possible to adapt the work platform length to the job.

Work Platform (APF)



Safety railing bracket
with lock bolt

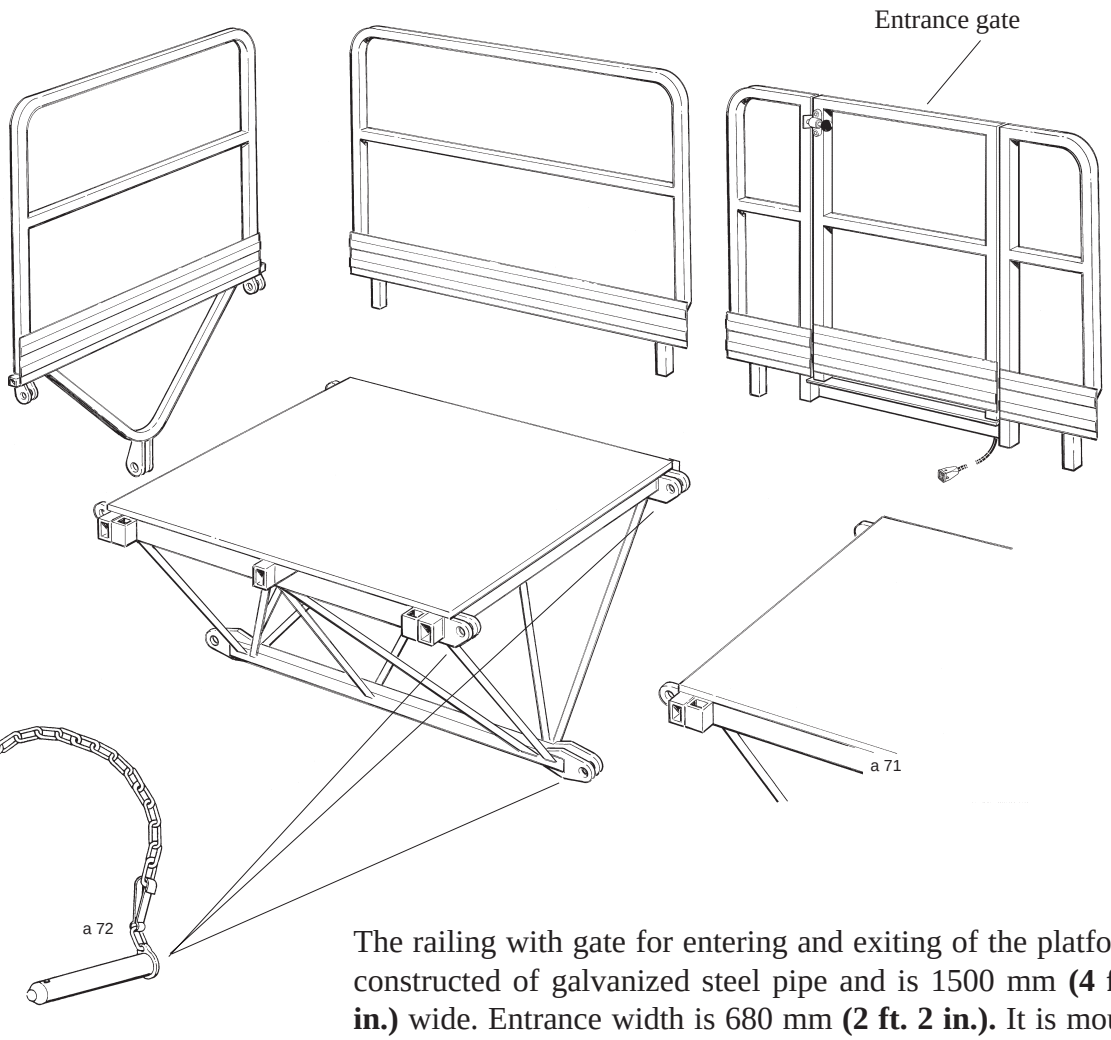
The platform consists of 819 **(2 ft. 8 in.)** and / or 1500 mm **(4 ft. 11 in.)** long sections, with a width 1.5 m, and are constructed of steel pipe and structural tubes.

The platform sections are equipped with a floor of weather treated anti-skid plywood.

The platform sections are assembled with 3 pins per side and locked in place with spring clips – to achieve lengths up to 19.4 m **(64 ft.)** in a single mast installation, APF - 50A.

In a twin mast installation the length of the platform can vary from 11.8 m to 43.3 m **(39 to 142 ft.)**, APF - 50A.
Alternatively 6.0 m to 28.5 m **(20 to 93.5 ft.)**, APF - 50B.

The safety railing, which is constructed of galvanized steel pipe, is mounted in brackets located at each corner of the platform section and locked into place with a bolt.
The railing comes equipped with a kickplate.



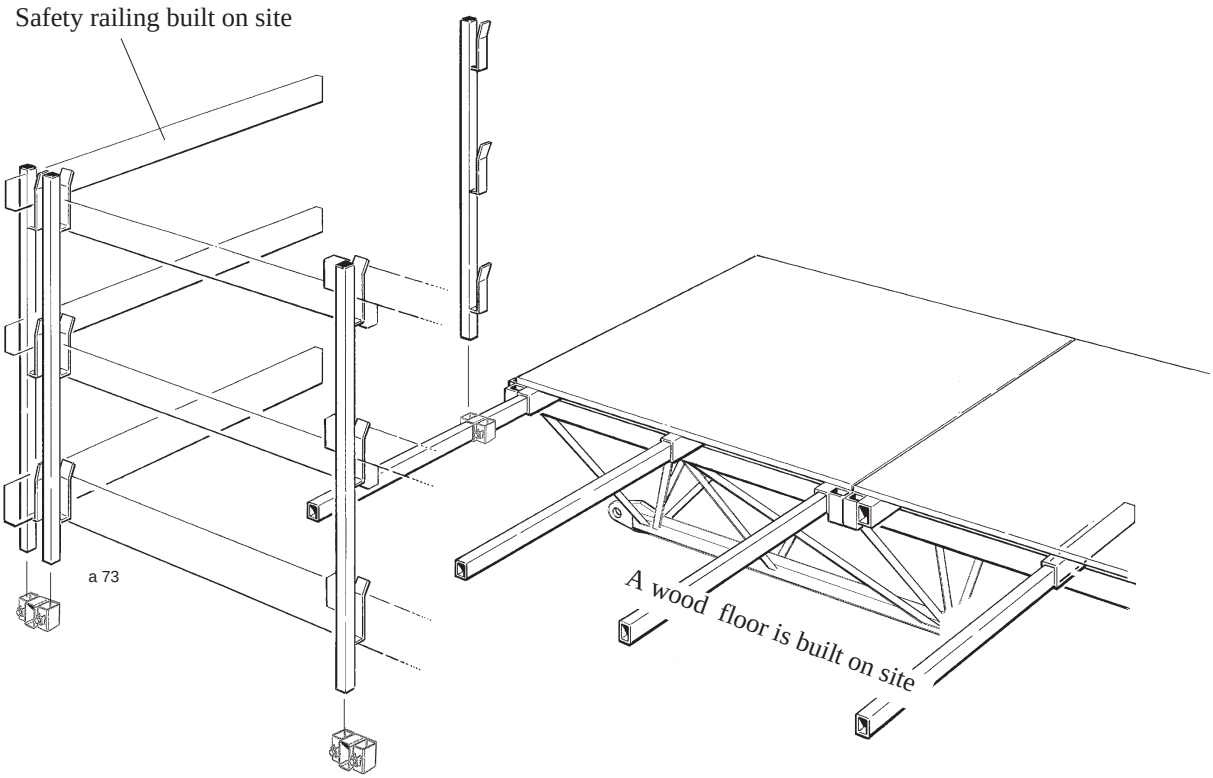
Pin for assembling
platform sections:
2 pcs. dia 30 mm (1 - 3/16’’)
1 pce. dia 37 mm (1 - 7/16’’)

The railing with gate for entering and exiting of the platform is constructed of galvanized steel pipe and is 1500 mm **(4 ft. 11 in.)** wide. Entrance width is 680 mm **(2 ft. 2 in.).** It is mounted in the same manner as the railing. The gate which is manually latched and electrically interlocked, must be closed in a closed position in order for the platform to operate.

Platform Extension maximum 1.8 m (6 ft.)

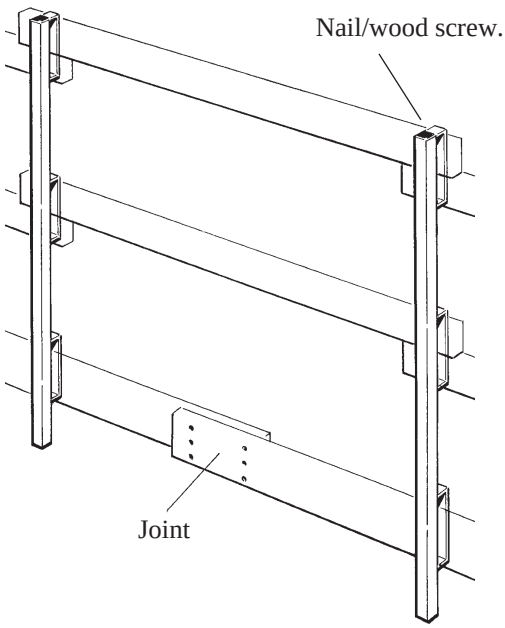
The wood floor of the platform extension is supported by structural tubes inserted into tubes forming part of the main platform section.

The extension beams are equipped with railing brackets so that safety railing can be job site built using appropriately dimensioned wooden elements.

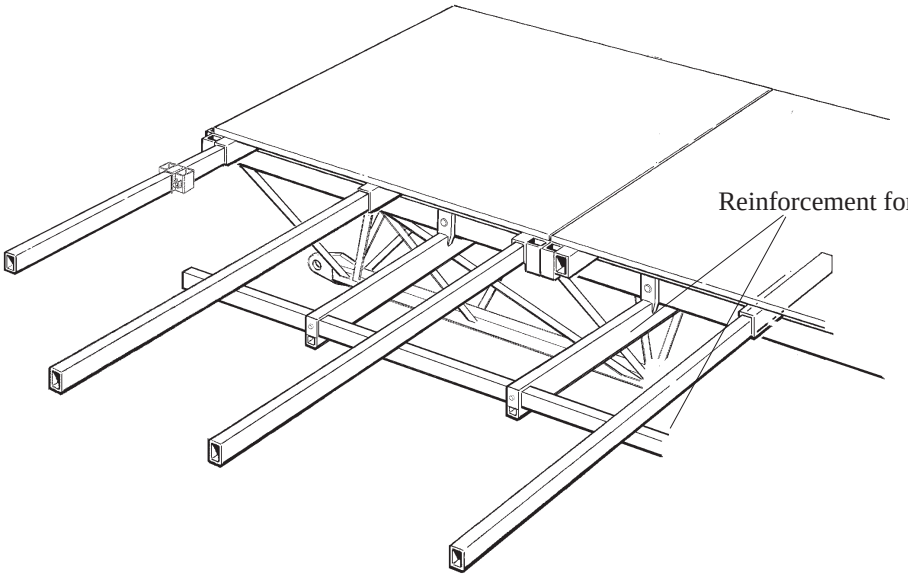


Railing Cross Members

The railing cross members must be of high quality (for example pine or spruce) with dimensions according to applicable standrad or local regulations.



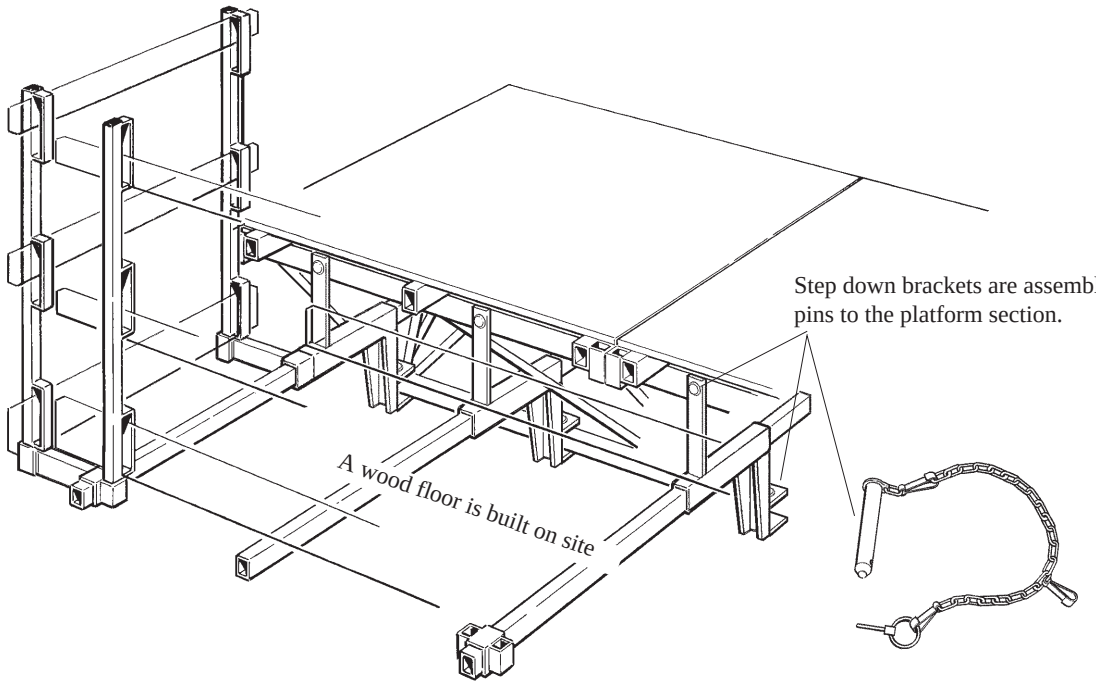
Extra long 2.7 m (9 ft.) platform extension



Stepdown platform extension

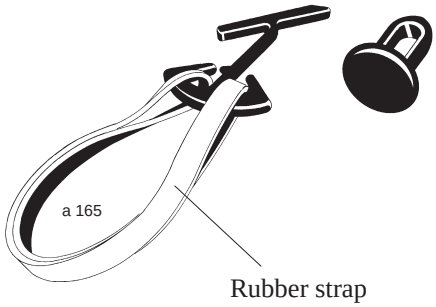
To obtain an ergonomical working position, as an example, when bricklaying, the platform can be equipped with an optional stepdown extension. The stepdown platform extension is accomplished in the same manner as the normal platform extension.

In addition to the extension beams and railing brackets for a normal extension a special step down bracket is required for the platform sections.



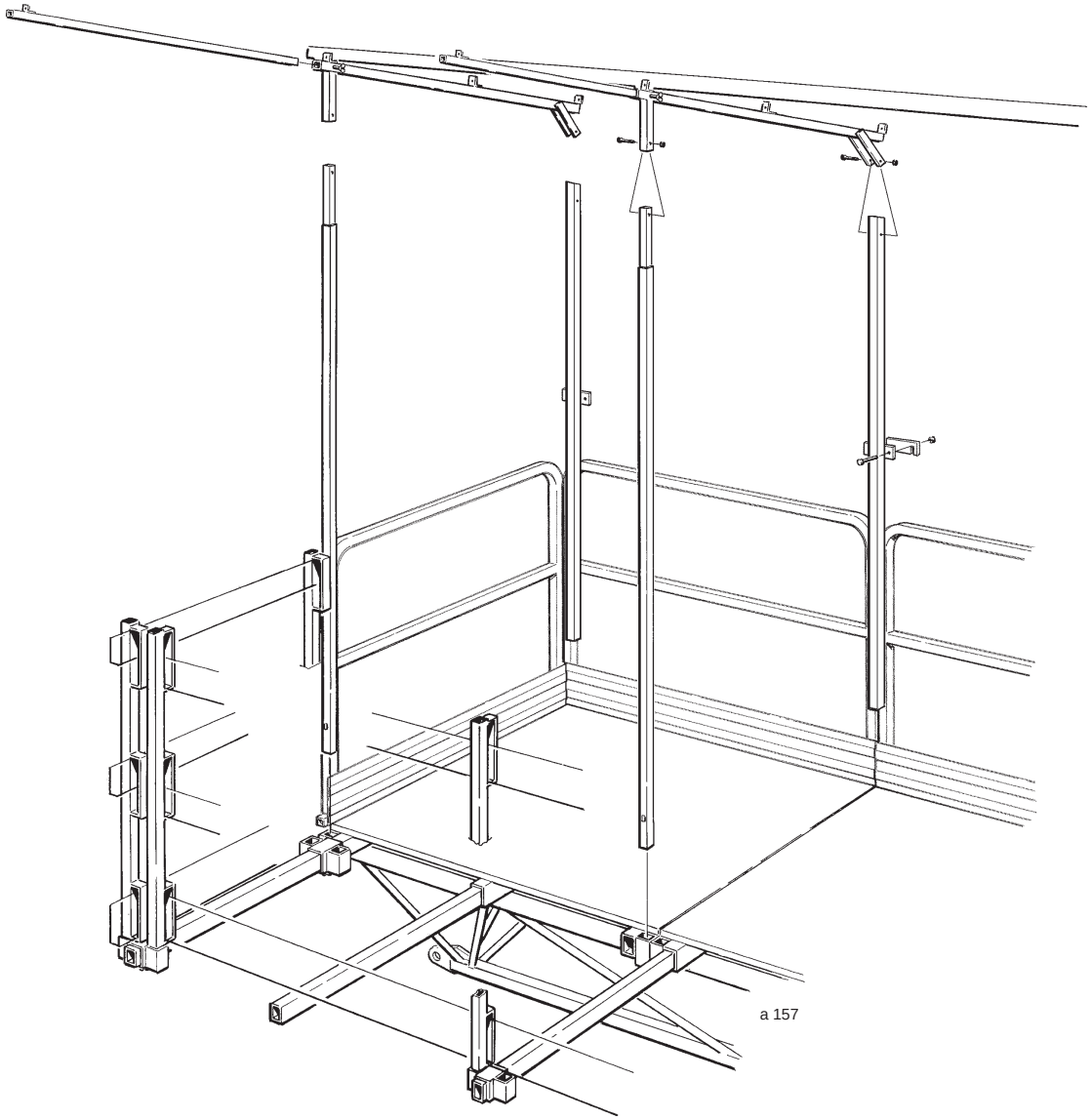
Canopy

To obtain a weather protected environment the work platform can be equipped with an optional canopy. The canopy frame is constructed of square steel structural tubes and covered with an reinforced transparent plastic cloth. The cloth is rolled out in one or two sheets, cut to the appropriate length and then attached by rubber straps in four rows at intervals of 1 m **(3.3 ft.**), over the entire length of the canopy. Openings for the mast and/or gate can be cut out with a knife.



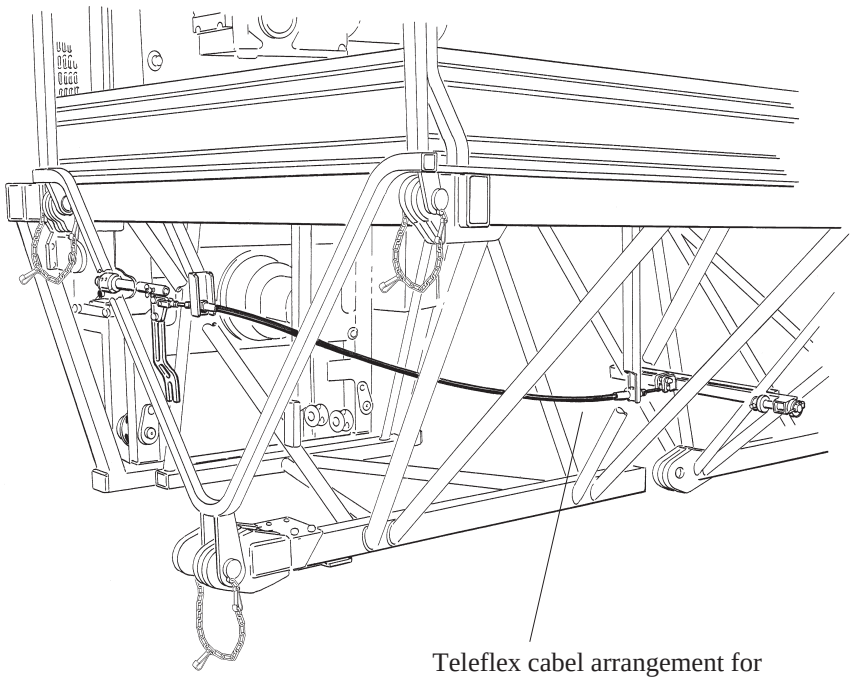
Rubber strap

Canopy frame clad with reinforced transparent plastic cloth

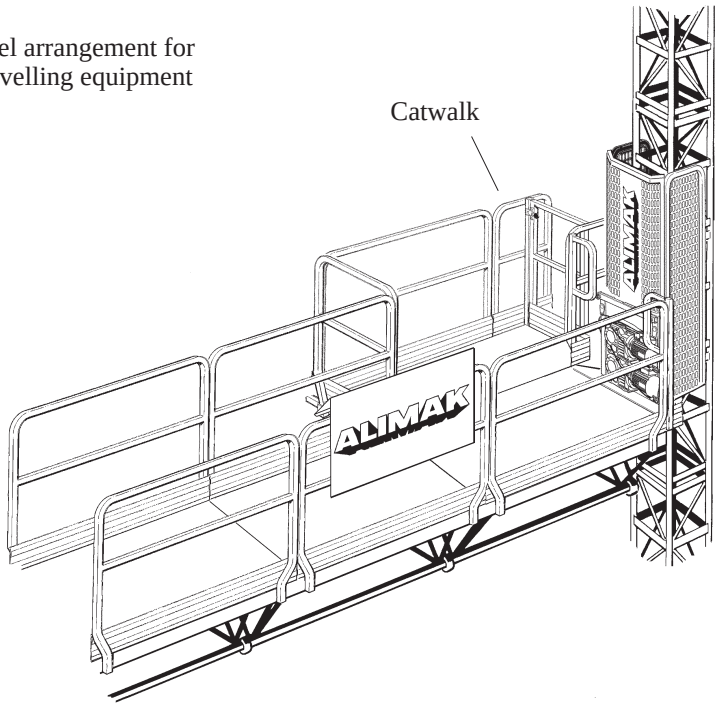


Platform for installations around corners

This accessory part can be delivered in square design or adapted for special purposes.



Teleflex cabel arrangement for horizontal levelling equipment

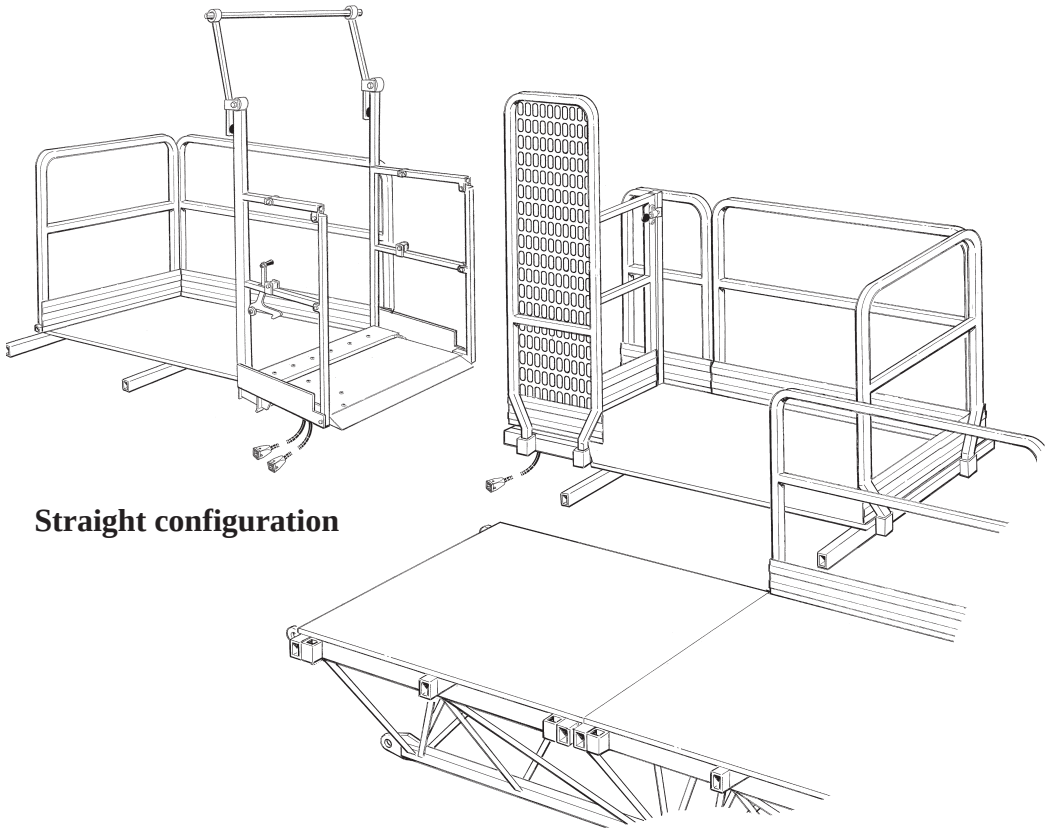


Catwalk extension

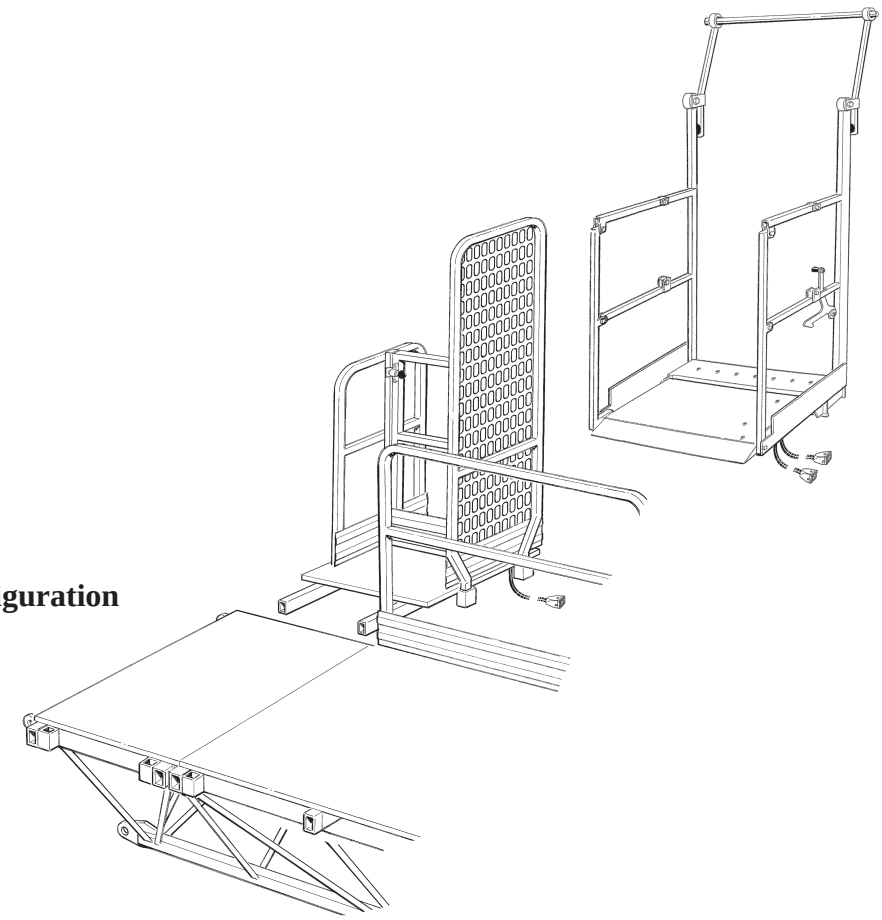
Catwalk extensions are used when several machines in a multiple mast installation must be able to access each other for material or personnel transportation.
The catwalk extension fit all platform sections but is always used at the end of the platform, on the left or right side.

Gates are electrically interlocked with both platforms.

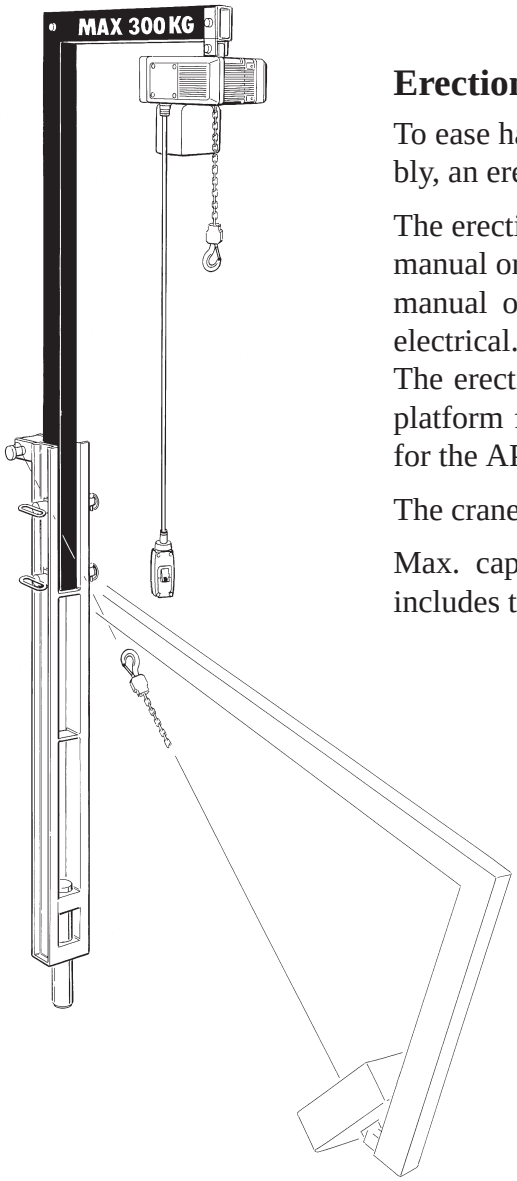
Catwalk extension



Straight configuration



Angular configuration



Erection crane

To ease handling of mast sections during erection and disassembly, an erection crane is available.

The erection crane is swung manually and can be equipped with manual or electric hoists. Drive unit type APF-50A can use both manual or electrical. Drive unit type APF-50B can only use electrical.
The erection crane is mounted to a bracket in the center of the platform for the APF-50A drive, or on the supplied attachment for the APF-50B drive.

The crane is self-erecting by using the winch.

Max. capacity of erection crane is 300 kg **(660 lbs.)** which includes the weight of the hoist.

Platform safety equipment

- Safety device which is activated on overspeed and brings the work platform to a controlled stop.
- Strategically located safety hooks make it impossible to drive over the top of the mast.
- Top and bottom final limit switch.
- 2 separate spring loaded motor brakes which requires power to be released.
- Automatic horizontal levelling for twin mast installations.
- Ability to be manually lower to ground level in the event of a power failure.
- Automatic horizontal levelling during manual lowering.
- Mechanically latched and electrically interlocked gate.
- Phase sequence relay.
- Phase sequence selector switch.

Electrical equipment

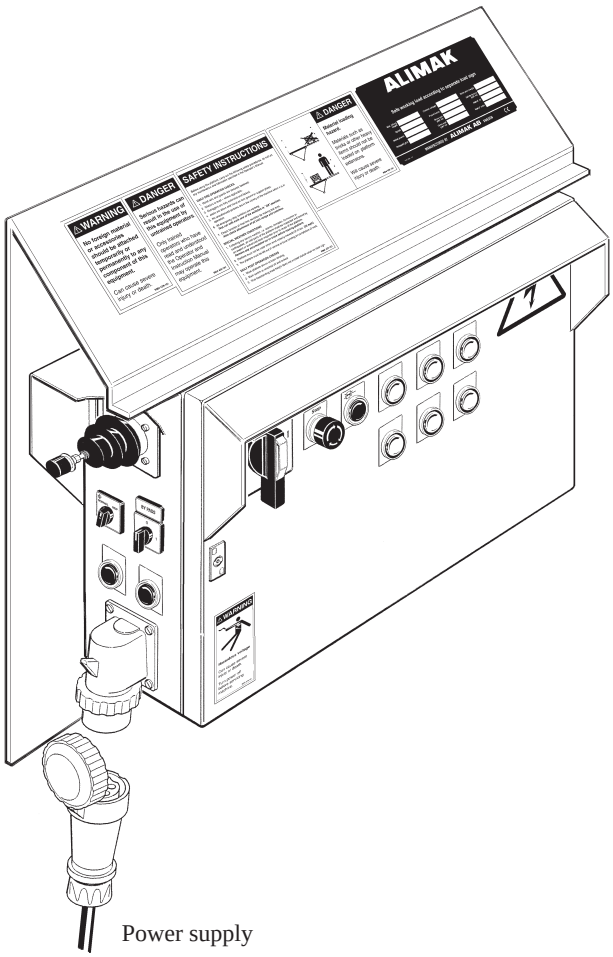
The electrical equipment for the work platform is designed and built to withstand the rough working conditions normally found on construction sites. The components are well proven and meet a number of national / international standards, such as IEC, CEE, EN, DIN, UL, CSA, SS.

The electric material is rated class IP 54 or higher.

Connection to power supply

Power input connection to the work platform electrical M-panel should be made with a minimum of 5 x 10.0 mm^2 **(approx. AWG No. 6)** cable.

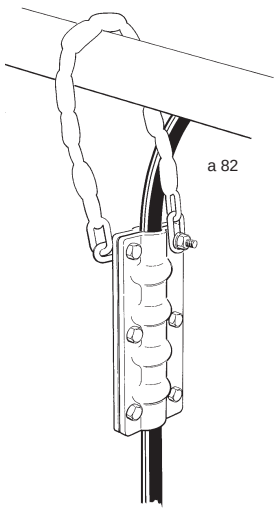
If the phase indication light is illuminated, change the phase sequence by means of the phase invertrer switch in the platform electrical M-panel.



Power supply

Cable handling

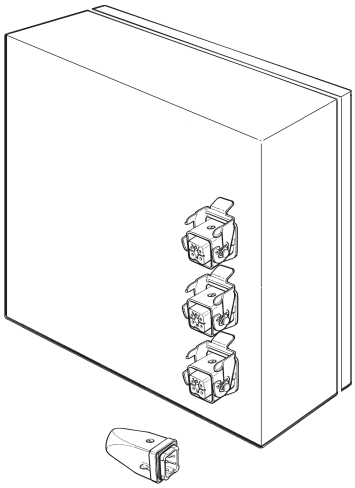
The trailing power cable is normally suspended under the platform. The cable coils freely on the ground.



Power supply

Electrical system description

The electrical equipment for the APF-50 system is designed to be flexible and easy to handle during erection and dismantling. This is possible since all the cables, limit switches and cabinets are connected by quick-connect plugs.



Junction box mounted below platform with outlets X91, X 93 and X 95 attached to the back. Jumper plug must be inserted when all of the gate options not in service.

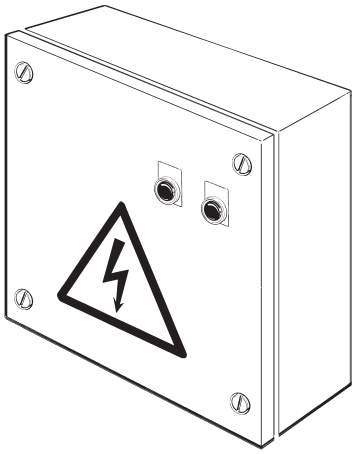
Drive units

There are two different types of drive units:

Drive unit A is used on APF (single or twin).

Drive unit B is used only on APF (twin).

The drive units, motors, brakes and all electrical components are wired to a junction box.
Located on the junction box there are three connection plugs for limit switches from gates/load ramps and also a 22-pole (6+16) connection plug which connects the drive unit to the platform electrical M-panel.



On the front of the junction box there are two buttons to reset the motor overload.

Catwalk

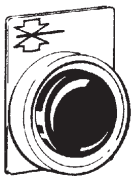
A catwalk is an electrical interlocked walk way between two work platforms.
One platform can have maximum two catwalks, one against each side of the platform.

The catwalk contains two different electrical components:

1. A catwalk-panel located at the base to interlock the platforms.
   This panel can interlock two catwalks.
2. A master module (1 pce/catwalk) which is located on the ”master” work platform, and ...

   ... a catwalk unit (1 pce/catwalk, unit 1 or unit 2) which is located on the ”slave” work platform.

The catwalk function makes it also possible to stop one of the work platforms semi automatically against the other platform, by using the Stop Next Landing system.



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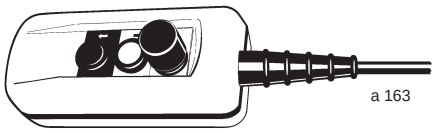
Stop next landing

This function is available on all controllers and it consists of a proximity switch located on the drive unit. Mechanical cams must be fitted in the mast for each landing.

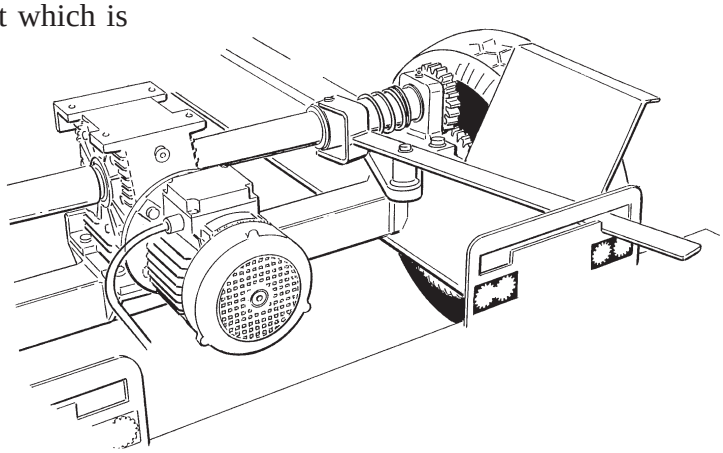
Horizontal drive for the mobile chassis

This is a portable module, which can be attached to the mobile chassis in order to motorize horizontal movement.

The module comes with all the mechanical and electrical components that are required. To get power to the drive, disconnect the power cable to the platform and connect it to the inlet on the junction box for the horizontal drive. Then it is possible to manoeuvre the chassis from a control unit which is attached to the controller by a flexible cable.



Controller



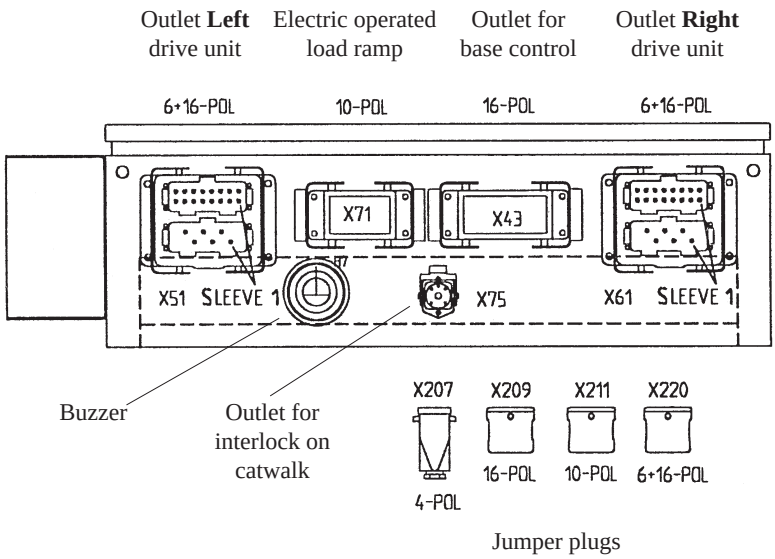
Platform electrical M-panel

In order to use the M-panel for single mast machinery, the junction box for the drive unit must be plugged into the left outlet on the bottom of the panel. A jumper plug must be inserted into the right side outlet on the same panel.

The panel is attached to a special railing which should be located in the most convenient position on the platform.

The platform M-panel is equipped with both automatic and manual levelling. The manual levelling consists of two buttons: ”Stop Left Machinery” and ”Stop Right Machinery”. These can be used during installation and for small adjustments to a desired level.
Automatic levelling works during normal operation and will keep the platform within approximately 2° (degrees) of the horizontal.

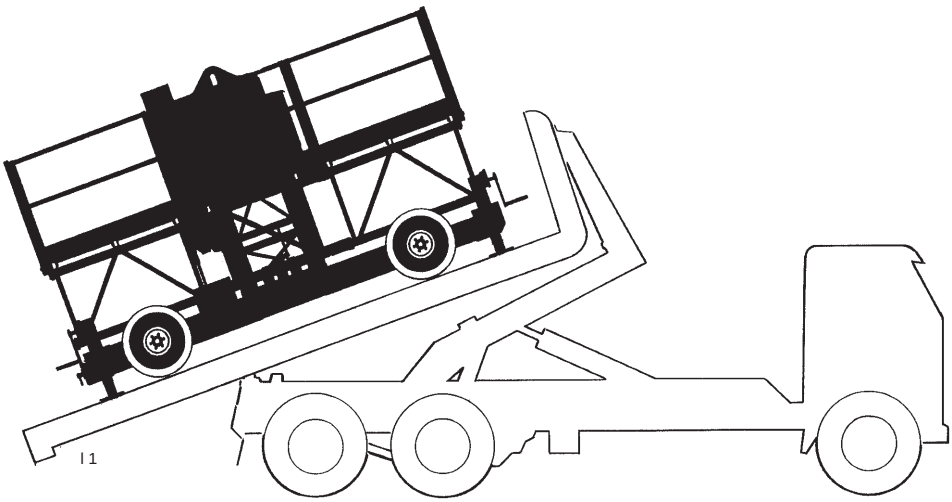
Underside of platform electrical M-panel



Jumper plugs

Transport and movement

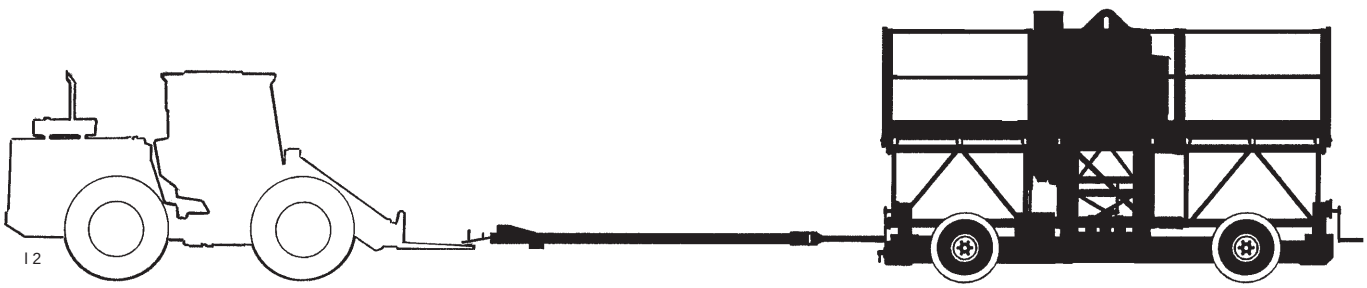
The machine can be towed or moved by its own drive unit (option) over short distances. For longer distances it is recommended that special transport vehicles be used. Only machine components, e.g. platform parts and mast sections can be left on the platform. The mast must always be dismantled during transportation on public roads.



Towing of platform without mast

The outriggers must be completely retracted and locked. The platform must also be lowered so that it rests on the rubber buffers.

Maximum allowable speed when towing is 20 km/h **(12 mph).**

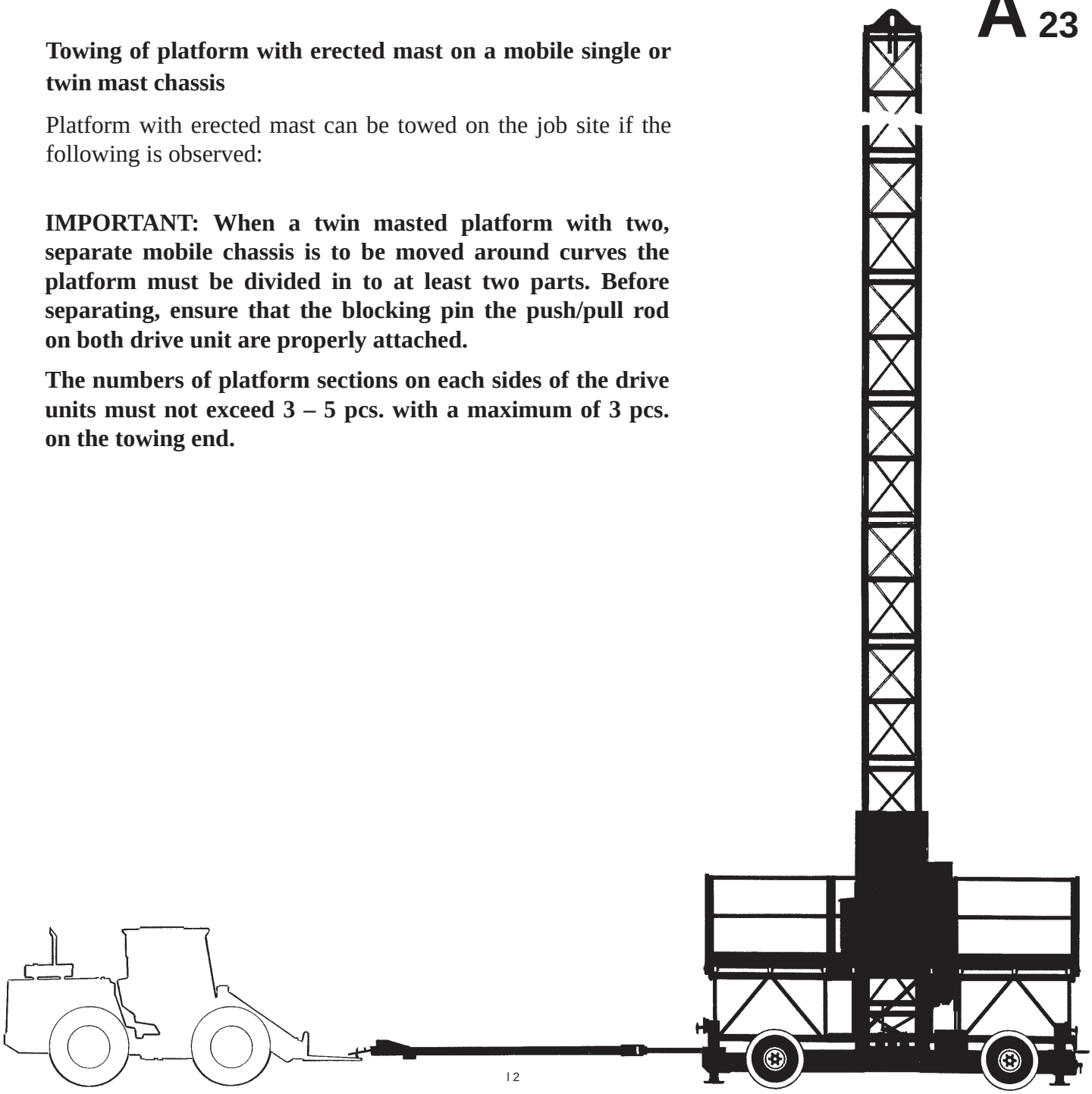


Towing of platform with erected mast on a mobile single or twin mast chassis

Platform with erected mast can be towed on the job site if the following is observed:

IMPORTANT: When a twin masted platform with two, separate mobile chassis is to be moved around curves the platform must be divided in to at least two parts. Before separating, ensure that the blocking pin the push/pull rod on both drive unit are properly attached.

The numbers of platform sections on each sides of the drive units must not exceed 3 – 5 pcs. with a maximum of 3 pcs. on the towing end.



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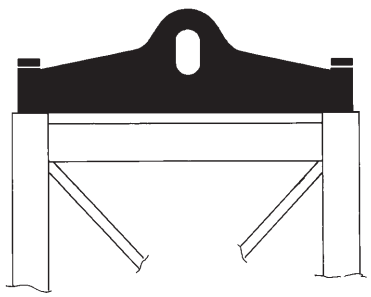
Lifting with crane

A 4.5 m **(15 ft.)** platform with mobile chassis (base unit) weighs approx. 5000 kg **(11000 lbs.)** including 13 mast sections.

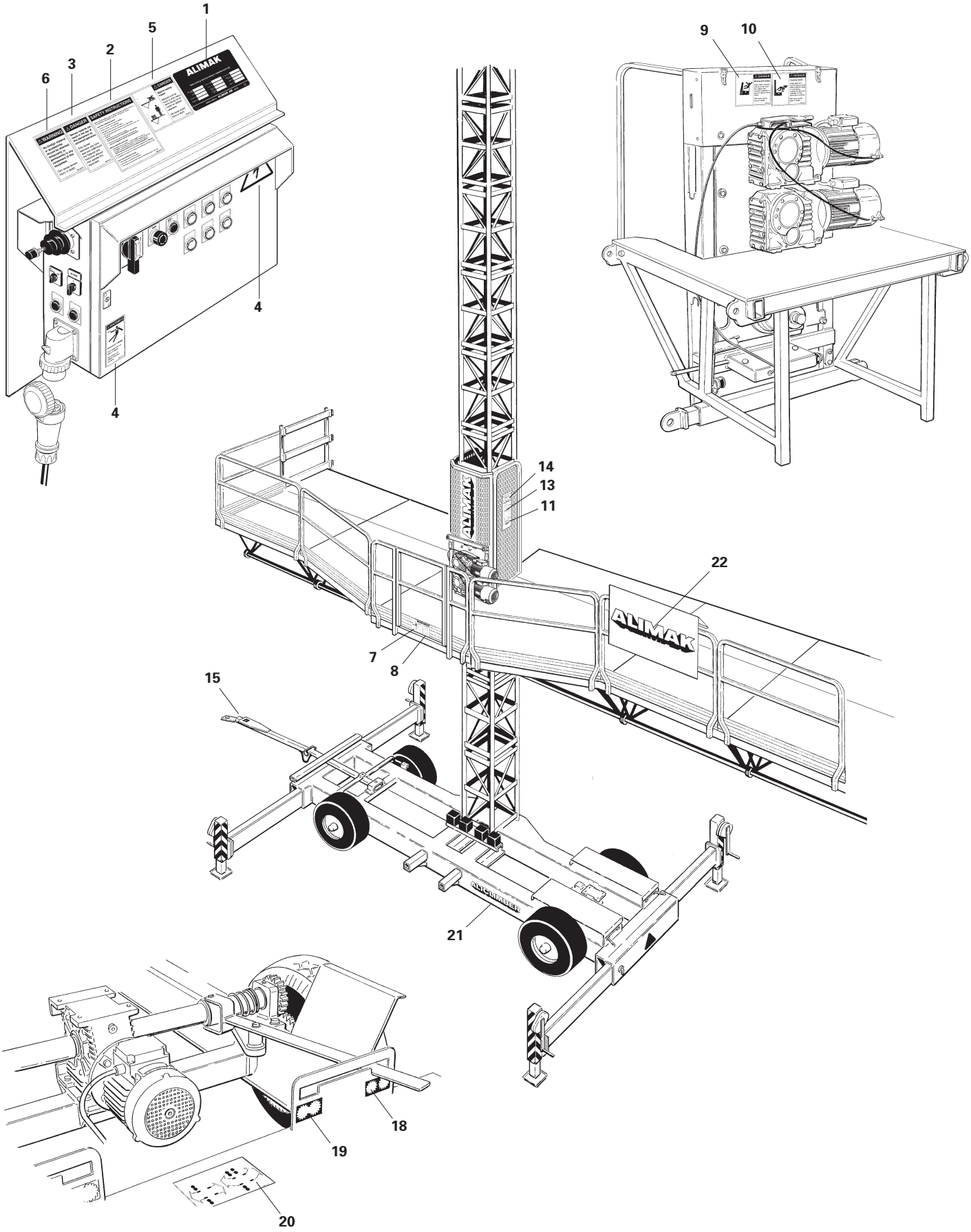
A 4.5 m platform with mast pedestal (base unit) weighs approx. 3500 kg **(7700 lbs.)** including 13 mast sections.

With a suitable crane connected to the lifting yoke at the mast top, the platform with erected mast can be lifted and moved with a crane. The lifting yoke is designed for a maximum load of 6000 kg **(13200 lbs.).**

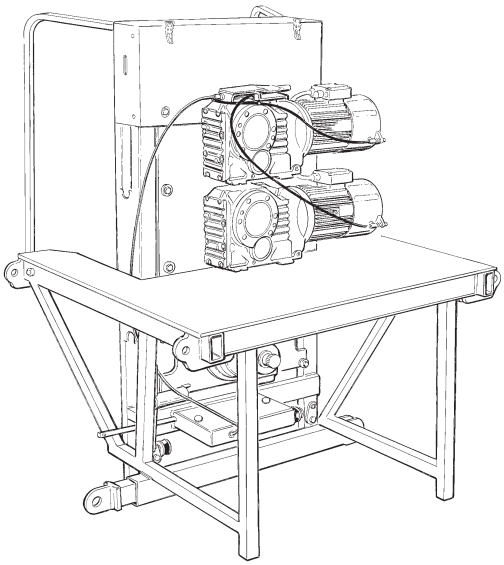
The platform must be balanced!



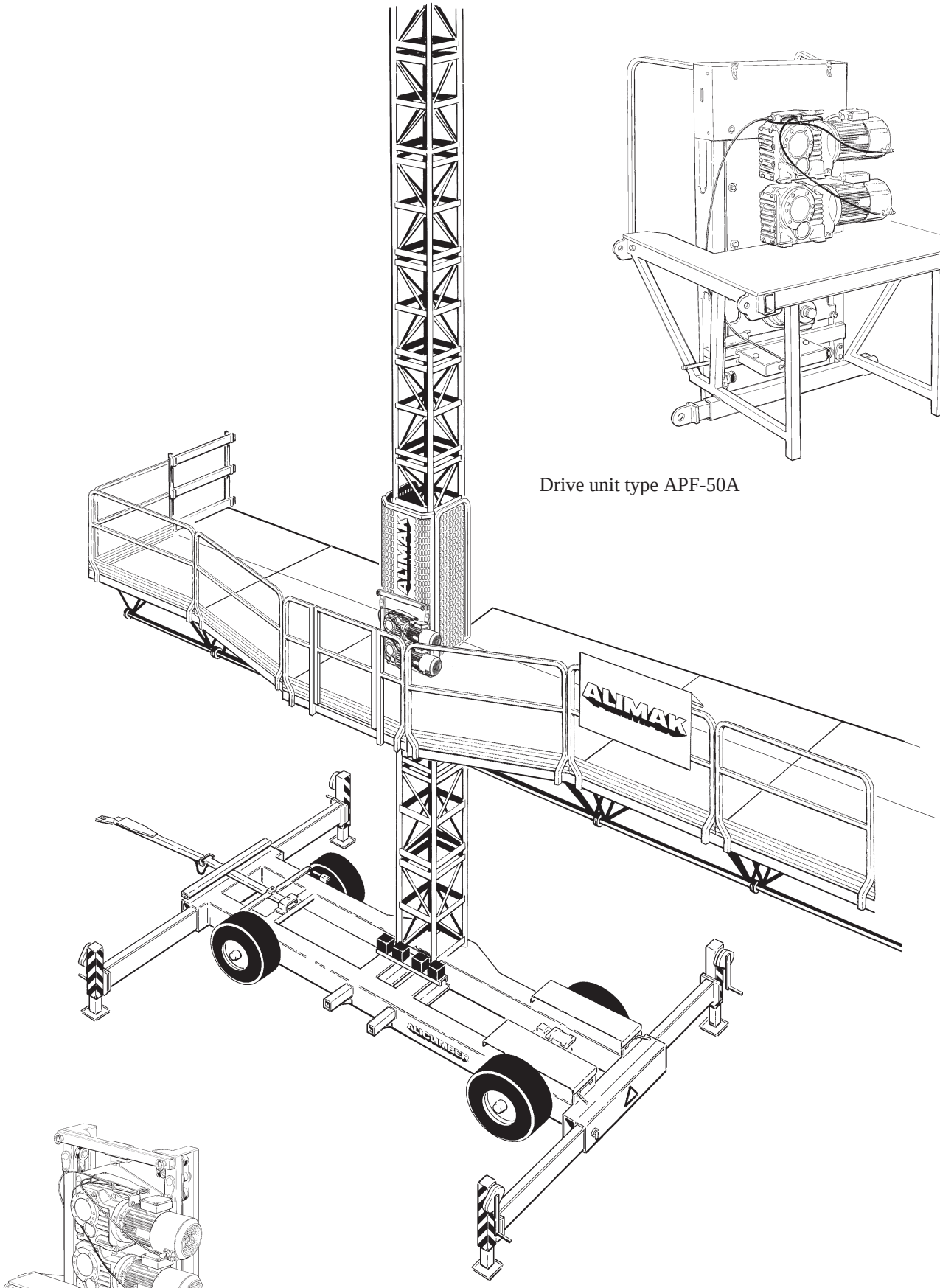
Product, information and safety signs

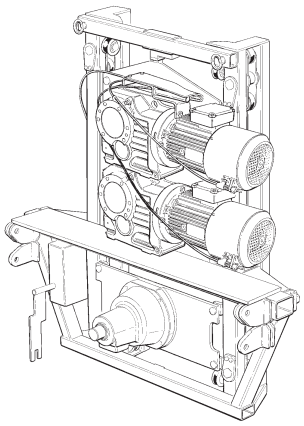


Technical data; Metric units ..... **B 1**
Technical data; Imperial units ..... **B 3**
Maximum allowed load ..... **B 4**
Maximum no. of people allowed on the platform ..... **B 12**
Stability data ..... **B 13**
Load signs ..... **B 14**
Determin mast height ..... **B 21**
Noise level at operation ..... **B 22**



Drive unit type APF-50A



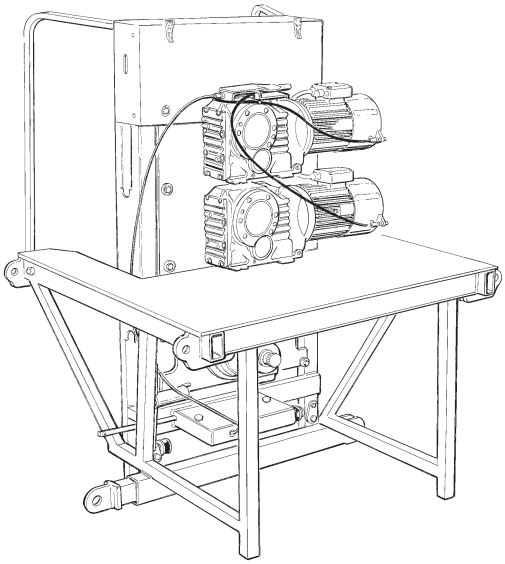


Drive unit type APF-50B

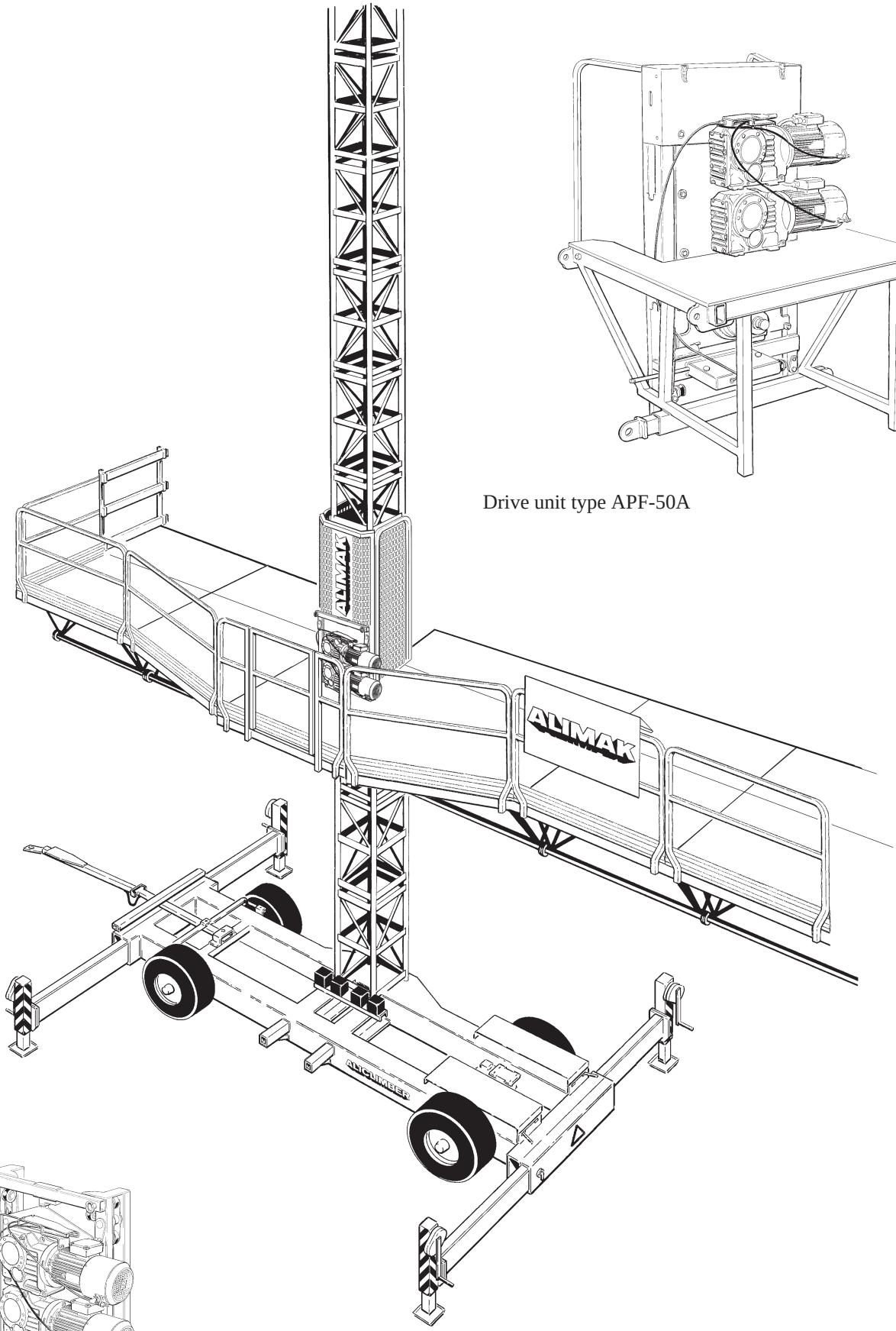
Technical data, Metric units (50Hz)

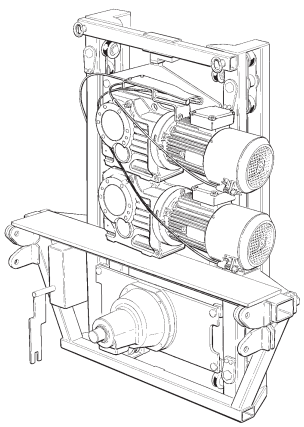
Capacity	APF-50A		APF-50B	
	Single	Twin	Single	Twin
Min. / Max. platform length	4.4 m / 19.4 m	11.8 m / 43.3 m	–	6.0 m / 28.5 m
Max. pay-load capacity	3970 kg at 4.4 m 2490 kg at 19.4 m	7800 kg at 11.8 m 4690 kg at 43.3 m	– –	8580 kg at 6.0 m 6360 kg at 28.5 m
Vertical travel speed	12 m/min.		–	12 m/min.
Horizontal travel speed with optional motor propelled chassis	8 m/min.		–	8 m/min.
Max. lifting height, untied mast with 4 completely extended outriggers on mobile chassis. Outdoor / Indoor installation	22 m outdoors 32 m indoors		–	22 m outdoors 32 m indoors
Max. lifting height, tied mast Increased lifting height on request	100 m		–	100 m
Tie distance when installed on mobile chassis	15 m each		–	15 m each
Tie distance when installed on pedestal base	1^{st} = 3 m, 2^{nd} = 6 m, 3^{rd} = 9 m remaining 15 m		–	3 - 6 - 9 and remaining 15 m
Top overhang in Operation. Wind speed maximum 12.5 m/sec.	6 m		–	6 m
Top overhang during Erection. Wind speed maximum 8 m/sec.	15 m		–	15 m
Dimensions and weights				
Lowest base unit transport height: – on pedestal base – on mobile chassis	 2300 mm 2650 mm			 2300 mm 2650 mm
Height to platform from ground: – on pedestal base – on mobile chassis	 1250 mm 1500 mm			 1250 mm 1500 mm
1.5 m platform section: weight 0.82 m platform section: weight	135 kg 85 kg			135 kg 85 kg
Mast section weight: length 1.508 m with 1 rack / 2 racks.	112 kg / 128 kg			112 kg / 128 kg
Mobile chassis: weight	1940 kg/pce.			1940 kg/pce.
Pedestal base: weight	320 kg/pce.			320 kg/pce.
Drive unit: weight	670 kg/pce.			610 kg/pce.
Electrical data				
Power – lift machinery	2 x 4.0 kw	4 x 4.0 kw	–	4 x 4.0 kw
Power – travel machinery	1 x 1.5 kw	2 x 1.5 kw	–	–
Voltage / Frequency	380 – 420V 50Hz		–	380 – 420V 50Hz
Control voltage / Frequency	230V 50 Hz		–	230V 50 Hz
Starting current (480V 50Hz)	2 x 40A	4 x 40A	–	4 x 40A
Power consumption	2 x 8kVA	4 x 8kVA	–	4 x 8kVA
Power supply fuses	32 A	63A	–	63A

B 2



Drive unit type APF-50A





Drive unit type APF-50B

Technical data, Imperial units (60Hz)

Capacity	APF-50A		APF-50B	
	Single	Twin	Single	Twin
Min. / Max. platform length	14.5 ft. / 64 ft.	39 ft. / 142 ft.	–	20 ft. / 93.5 ft.
Max. pay-load capacity	9,040 lbs. at 14.5 ft. 5,780 lbs. at 64 ft.	17,680 lbs. at 39 ft. 10,820 lbs. at 142 ft.	– –	19,400 lbs. at 20 ft. 14,510 lbs. at 93.5 ft.
Vertical travel speed	39 fpm.		–	39 fpm.
Horizontal travel speed with optional motor propelled chassis	30 fpm.		–	30 fpm.
Max. lifting height, untied mast with 4 completely extended outriggers on mobile chassis. Outdoor / Indoor installation	72 ft. outdoors 105 ft. indoors		–	72 ft. outdoors 105 ft. indoors
Max. lifting height, tied mast Increased lifting height on request	330 ft.		–	330 ft.
Tie distance when installed on mobile chassis	50 ft. each		–	50 ft. each
Tie distance when installed on pedestal base	1^{st} = 10’, 2^{nd} = 20’, 3^{rd} =30’ remaining 50 ft.		–	10’ - 20’ - 30’ and remaining 50 ft.
Top overhang in Operation. Wind speed maximum 28 mph.	20 ft.		–	20 ft.
Top overhang during Erection. Wind speed maximum 34 mph.	50 ft.		–	50 ft.
Dimensions and weights				
Lowest base unit transport height: – on pedestal base – on mobile chassis	 7’ 6 5/8’’ 8’ 8 3/8’’			 7’ 6 5/8’’ 8’ 8 3/8’’
Height to platform from ground: – on pedestal base – on mobile chassis	 4’ 1 1/4’’ 4’ 11’’			 4’ 1 1/4’’ 4’ 11’’
1.5 m platform section: weight 0.82 m platform section: weight	298 lbs. 188 lbs.			298 lbs. 188 lbs.
Mast section weight: length 1.508 m with 1 rack / 2 racks.	247 / 282 lbs.			247 / 282 lbs.
Mobile chassis: weight	4300 lbs./pce.			4300 lbs./pce.
Pedestal base: weight	706 lbs./pce.			706 lbs./pce.
Drive unit: weight	1478 lbs./pce.			1345 lbs./pce.
Electrical data				
Power – lift machinery	2 x 4.6 kw	4 x 4.6 kw	–	4 x 4.6 kw
Power – travel machinery	1 x 1.5 kw	2 x 1.5 kw	–	–
Voltage/Frequency	440 – 480V 60Hz		–	440 – 480V 60Hz
Control voltage/Frequency	230V 60 Hz		–	230V 60 Hz
Starting current (480V 60Hz)	2 x 40A	4 x 40A	–	4 x 40A
Power consumption	2 x 5kVA	4 x 5kVA	–	4 x 5kVA
Power supply fuses	30A	60A	–	60A
Outlet for hand tool	1 Phase 110V 16A		–	1 Phase 110V 16A
Outlet for hand tool	1 Phase 240V 10A		–	1 Phase 240V 10A

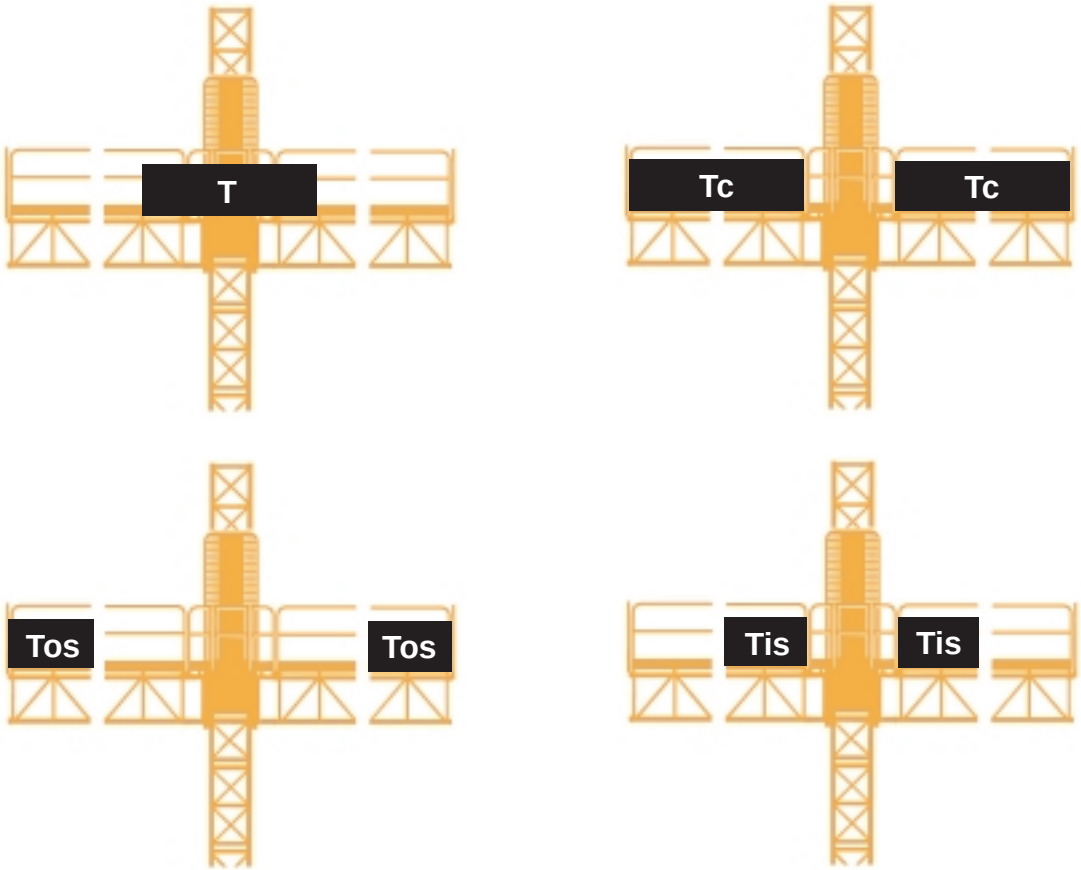
Maximum allowed loading

according to ISO 16369 (EN 1495)

The following tables show several typical load cases. For other load cases not shown, contact the nearest Alimak representative.

Note: Loads may not be placed on platform extensions or catwalks.

Maximum load – Single mast configuration and drive unit type APF-50 A



Nc = Number of cantilever platform sections
L = Platform length
T = Total payload capacity (optimized load distribution)
Tc = Maximum evenly distributed cantilever load on one side
Tos = Maximum concentrated load on outermost platform section
Tis = Maximum concentrated load on innermost platform section

The sum of the two cantilever loads Tc (Tos or Tis) must never exceed the total payload capacity T for the platform configuration in question. For this purpose, if a full Tc (Tos or Tis) load is placed on one side the load on the other must be limited to T minus Tc (Tos or Tis) to avoid T being exceeded.

Metric units

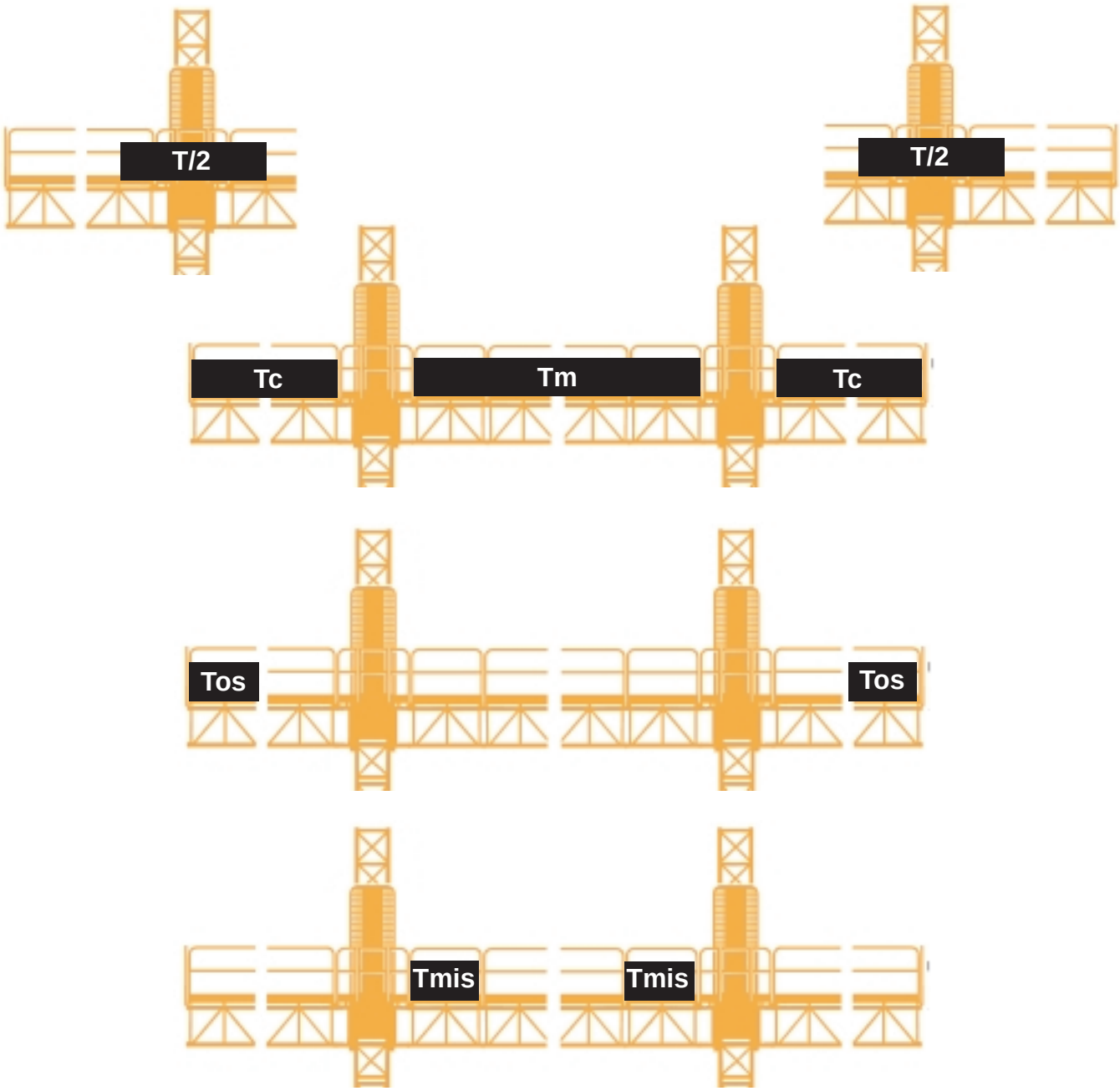
Aliclimber APF-50A Single			Without platform extension				With platform extension			
Nc left	Nc right	L m	T kg	Tc kg	Tos kg	Tis kg	T kg	Tc kg	Tos kg	Tis kg
1	1	4.4	3970	2520	2520	2520	3800	2520	2520	2520
1 + 1/2	1 + 1/2	6.0	3770	1830	1570	2370	3510	1830	1570	2370
2	2	7.4	3670	1450	1140	2240	3350	1450	1140	2240
2 + 1/2	2 + 1/2	9.0	3470	1140	850	2100	3060	1140	850	2100
3	3	10.4	3380	940	670	1970	2910	940	670	1970
3 + 1/2	3 + 1/2	12.0	3180	760	530	1820	2620	760	530	1820
4	4	13.4	3080	640	440	1690	2470	640	440	1690
4 + 1/2	4 + 1/2	15.0	2880	520	350	1550	2180	520	350	1550
5	5	16.4	2790	440	290	1420	2020	440	290	1420
5 + 1/2	5 + 1/2	18.0	2590	360	240	1270	1740	360	240	1270
6	6	19.4	2490	300	200	1140	1580	190	120	1140

Imperial units

Aliclimber APF-50A Single			Without platform extension				With platform extension			
Nc left	Nc right	L ft.	T lbs.	Tc lbs.	Tos lbs.	Tis lbs.	T lbs.	Tc lbs.	Tos lbs.	Tis lbs.
1	1	14.44	9040	5550	5550	5550	8660	5550	5550	5550
1 + 1/2	1 + 1/2	19.69	8600	4040	3460	5230	8020	4040	3460	5230
2	2	24.28	8390	3190	2520	4940	7680	3190	2520	4940
2 + 1/2	2 + 1/2	29.53	7950	2500	1870	4620	7050	2500	1870	4620
3	3	34.12	7730	2060	1490	4340	6700	2060	1490	4340
3 + 1/2	3 + 1/2	39.37	7290	1670	1170	4010	6070	1670	1170	4010
4	4	43.96	7080	1400	960	3730	5730	1400	960	3730
4 + 1/2	4 + 1/2	49.21	6640	1150	780	3410	5090	1150	780	3410
5	5	53.81	6430	970	650	3120	4750	970	650	3120
5 + 1/2	5 + 1/2	59.06	5990	800	520	2800	4110	800	520	2800
6	6	63.65	5780	670	430	2520	3770	420	260	2510

The weight of 2 people including equipment 240 kg (530 lbs.) may be added to the above loads. Allowable personal items, tools, paint etc. for each person is a maximum 40 kg (88 lbs.).

Maximum load – Twin mast configuration and drive unit type APF-50 A



Nc	=	Number of cantilever platform sections
Nm	=	Number of midspan platform sections
L	=	Platform length
T	=	Total payload capacity (optimized load distribution)
Tc	=	Maximum evenly distributed cantilever load on one side
Tm	=	Midspan load, evenly distributed
Tmis	=	Maximum concentrated load on midspan innermost platform section
Tos	=	Maximum concentrated load on outermost platform section

The sum of the two cantilever loads Tc (or Tos) and the midspan load Tm, must never exceed the total payload capacity T for the platform configuration in question.

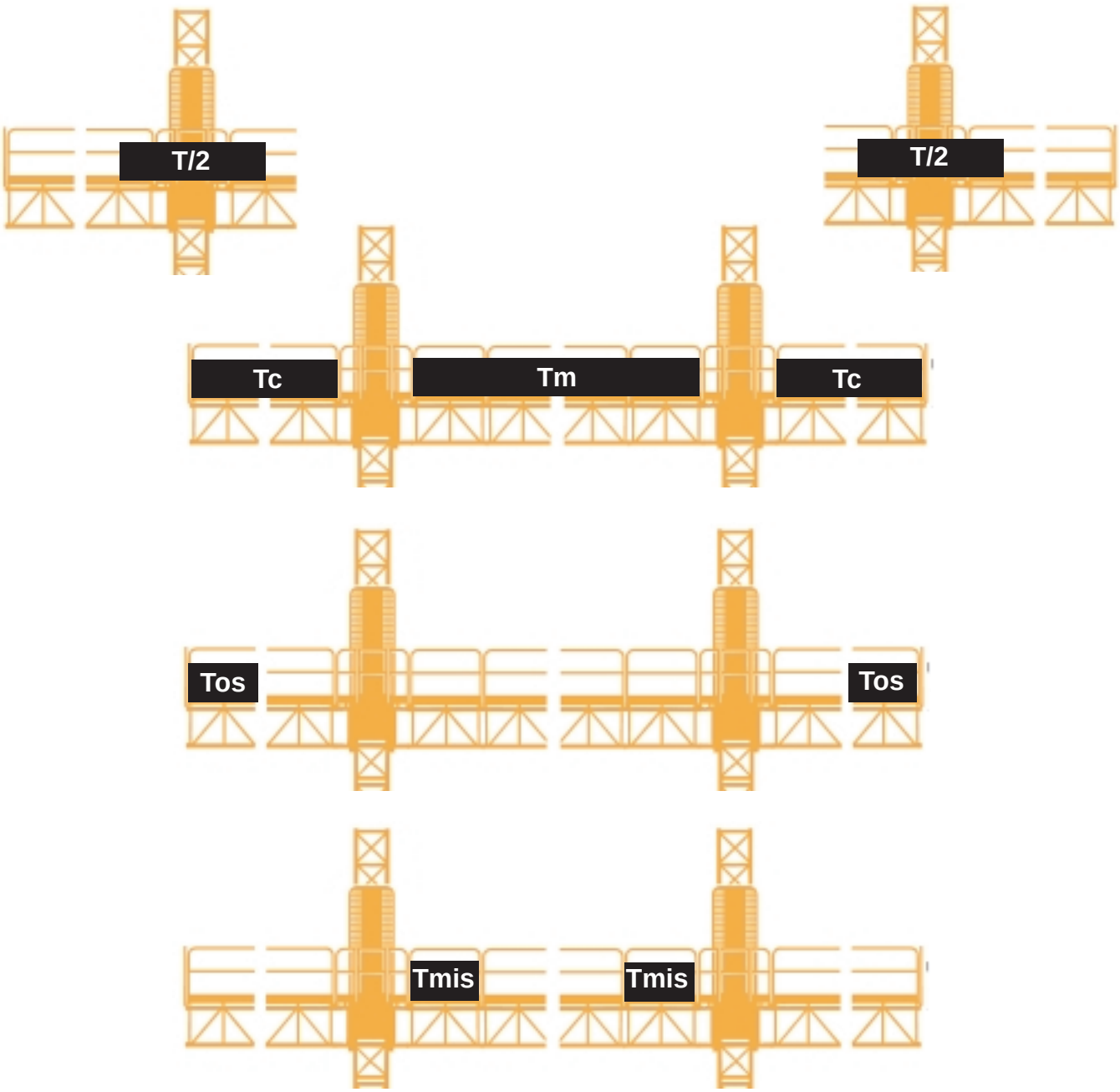
The weight of 4 people including equipment 400 kg (882 lbs.) may be added to the above loads. Allowable personal items, tools, paint etc. for each person is 20 kg (44 lbs.).

Metric units

Aliclimber APF-50A Twin				Without platform extension					With platform extension				
Nc left	Nm mid.	Nc right	L m.	T kg	Tm kg	Tmis kg	Tc kg	Tos kg	T kg	Tm kg	Tmis kg	Tc kg	Tos kg
1	4	1	11.8	7800	7800	3900	3900	3900	7360	7360	3680	3680	3680
1	5	1	13.3	7650	7650	3830	3830	3830	7140	7140	3570	3570	3570
1	6	1	14.8	7500	7500	3750	3750	3750	6910	6910	3460	3460	3460
2	4	2	14.8	7500	7500	3750	3750	3570	6910	6910	3460	3460	3460
1	7	1	16.3	7360	7360	3680	3680	3680	6690	6690	3350	3350	3350
2	5	2	16.3	7360	7360	3680	3680	3570	6690	6690	3350	3350	3350
1	8	1	17.8	7210	6430	3600	3600	3600	6470	5940	3240	3240	3240
2	6	2	17.8	7210	7210	3600	3600	3570	6470	6470	3240	3240	3240
3	4	3	17.8	7210	7210	3600	2620	1810	6470	6470	3240	2430	1680
1	9	1	19.3	7060	5400	3530	3530	3530	6250	4840	3120	3120	3120
2	7	2	19.3	7060	7060	3530	3530	3530	6250	6250	3120	3120	3120
3	5	3	19.3	7060	7060	3530	2620	1810	6250	6250	3120	2430	1680
1	10	1	20.8	6910	4550	3460	3460	3460	6030	3930	3010	3010	3010
2	8	2	20.8	6910	6430	3460	3460	3460	6030	5940	3010	3010	3010
3	6	3	20.8	6910	6910	3460	2620	1810	6030	6030	3010	2430	1680
4	4	4	20.8	6910	6910	3460	1540	1010	6030	6030	3010	1290	840
1	11	1	22.3	6760	3830	3380	3380	3380	5810	3160	2900	2900	2900
2	9	2	22.3	6760	5400	3380	3380	3380	5810	4840	2900	2900	2900
3	7	3	22.3	6760	6760	3380	2620	1810	5810	5810	2900	2430	1680
4	5	4	22.3	6760	6760	3380	1540	1010	5810	5810	2900	1290	840
1	12	1	23.8	6620	3210	3310	3310	3310	5580	2480	2790	2790	2790
2	10	2	23.8	6620	4550	3310	3310	3310	5580	3930	2790	2790	2790
3	8	3	23.8	6620	6430	3310	2620	1810	5580	5580	2790	2430	1680
4	6	4	23.8	6620	6620	3310	1540	1010	5580	5580	2790	1290	840
1	13	1	25.3	6470	2670	3230	3230	3230	5360	1870	2680	2680	2680
2	11	2	25.3	6470	3830	3230	3230	3230	5360	3160	2680	2680	2680
3	9	3	25.3	6470	5400	3230	2620	1810	5360	4840	2680	2430	1680
4	7	4	25.3	6470	6470	3230	1540	1010	5360	5360	2680	1290	840
1	14	1	26.8	6320	2190	3160	3160	3160	5140	1330	2570	2570	2570
2	12	2	26.8	6320	3210	3160	3160	3160	5140	2480	2570	2570	2570
3	10	3	26.8	6320	4550	3160	2620	1810	5140	3930	2570	2430	1680
4	8	4	26.8	6320	6320	3160	1540	1010	5140	5140	2570	1290	840
1	15	1	28.3	6170	1760	3090	3090	3090	4920	840	2460	2460	2460
2	13	2	28.3	6170	2670	3090	3090	3090	4920	1870	2460	2460	2460
3	11	3	28.3	6170	3830	3090	2620	1810	4920	3160	2460	2430	1680
4	9	4	28.3	6170	5400	3090	1540	1010	4920	4840	2460	1290	840
1	16	1	29.8	6020	1360	3010	3010	3010	4700	380	1820	2350	2350
2	14	2	29.8	6020	2190	3010	3010	3010	4700	1330	2350	2350	2350
3	12	3	29.8	6020	3210	3010	2620	1810	4700	2480	2350	2350	1680
4	10	4	29.8	6020	4550	3010	1540	1010	4700	3930	2350	1290	840
1	17	1	31.3	5880	1000	2940	2940	2940	4480	NA	NA	2240	2240
2	15	2	31.3	5880	1760	2940	2940	2940	4480	840	2240	2240	2240
3	13	3	31.3	5880	2670	2940	2620	1810	4480	1870	2240	2240	1680
4	11	4	31.3	5880	3830	2940	1540	1010	4480	3160	2240	1290	840
1	18	1	32.8	5730	660	2860	2860	2860	4260	NA	NA	2130	2130
2	16	2	32.8	5730	1360	2860	2860	2860	4260	380	1820	2130	2130
3	14	3	32.8	5730	2190	2860	2620	1810	4260	1330	2130	2130	1680
4	12	4	32.8	5730	3210	2860	1540	1010	4260	2480	2130	1290	840
1	19	1	34.3	5580	350	1970	2790	2790	4030	NA	NA	2020	2020
2	17	2	34.3	5580	1000	2790	2790	2790	4030	NA	NA	2020	2020
3	15	3	34.3	5580	1760	2790	2620	1810	4030	840	2020	2020	1680
4	13	4	34.3	5580	2670	2790	1540	1010	4030	1870	2020	1290	840
2	18	2	35.8	5430	660	2720	2720	2720	3810	NA	NA	1910	1910
3	16	3	35.8	5430	1360	2720	2620	1810	3810	380	1820	1910	1680
4	14	4	35.8	5430	2190	2720	1540	1010	3810	1330	1910	1290	840
2	19	2	37.3	5280	350	1970	2640	2640	3590	NA	NA	1800	1800
3	17	3	37.3	5280	1000	2640	2620	1810	3590	NA	NA	1800	1680
4	15	4	37.3	5280	1760	2640	1540	1010	3590	840	1800	1290	840
3	18	3	38.8	5140	660	2570	2570	1810	3370	NA	NA	1680	1680
4	16	4	38.8	5140	1360	2570	1540	1010	3370	380	1680	1290	840
3	19	3	40.3	4990	350	1970	2490	1810	3150	NA	NA	1570	1570
4	17	4	40.3	4990	1000	2490	1540	1010	3150	NA	NA	1290	840
4	18	4	41.8	4840	660	2420	1540	1010	2930	NA	NA	1290	840
4	19	4	43.3	4690	350	1970	1540	1010	2700	NA	NA	1290	840

B 8

Maximum load – Twin mast configuration and drive unit type APF-50 A



Nc	=	Number of cantilever platform sections
Nm	=	Number of midspan platform sections
L	=	Platform length
T	=	Total payload capacity (optimized load distribution)
Tc	=	Maximum evenly distributed cantilever load on one side
Tm	=	Midspan load, evenly distributed
Tmis	=	Maximum concentrated load on midspan innermost platform section
Tos	=	Maximum concentrated load on outermost platform section

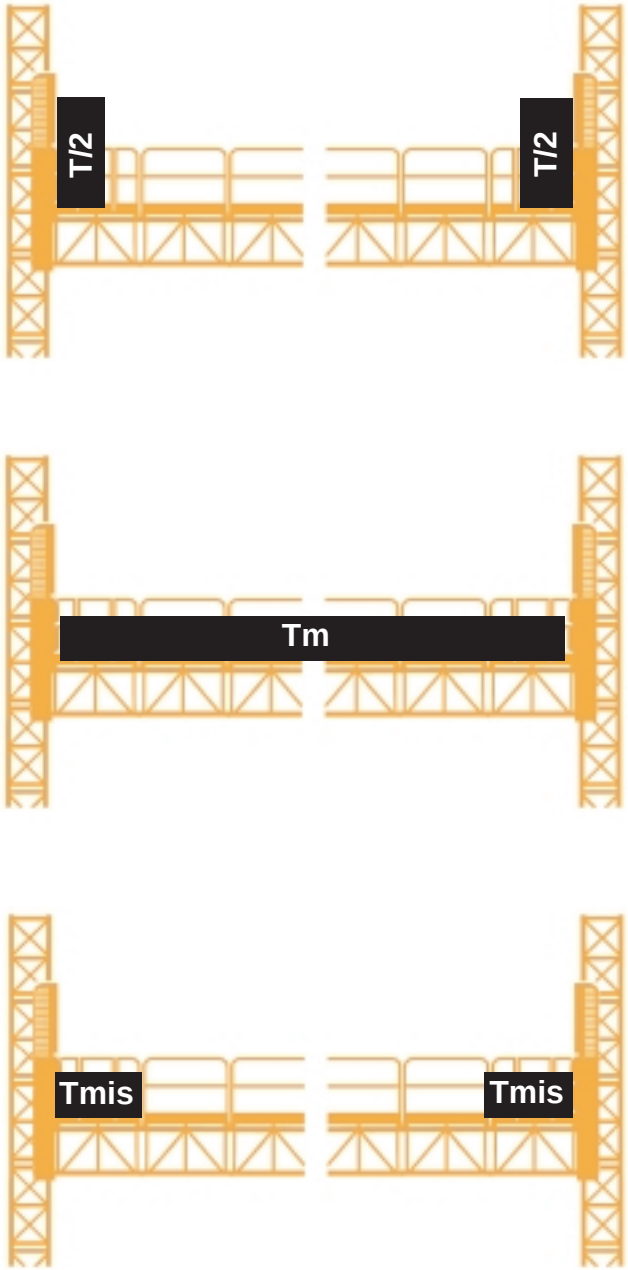
The sum of the two cantilever loads Tc (or Tos) and the midspan load Tm, must never exceed the total payload capacity T for the platform configuration in question.

The weight of 4 people including equipment 400 kg (882 lbs.) may be added to the above loads. Allowable personal items, tools, paint etc. for each person is 20 kg (44 lbs.).

Imperial units

Aliclimber APF-50A Twin				Without platform extension					With platform extension				
Nc left	Nm mid.	Nc right	L ft.	T lbs.	Tm lbs.	Tmis lbs.	Tc lbs.	Tos lbs.	T lbs.	Tm lbs.	Tmis lbs.	Tc lbs.	Tos lbs.
1	4	1	38.71	17680	17190	8600	8600	8600	16700	16220	8110	8110	8110
1	5	1	43.64	17350	16870	8430	8430	8430	16210	15730	7870	7870	7870
1	6	1	48.56	17020	16540	8270	8270	8270	15730	15240	7620	7620	7620
2	4	2	48.56	17020	16540	8270	8270	7870	15730	15240	7620	7620	7620
1	7	1	53.48	16700	16210	8110	8110	8110	15240	14750	7380	7380	7380
2	5	2	53.48	16700	16210	8110	8110	7870	15240	14750	7380	7380	7380
1	8	1	58.4	16370	14170	7940	7940	7940	14750	13080	7130	7130	7130
2	6	2	58.4	16370	15890	7940	7940	7870	14750	14270	7130	7130	7130
3	4	3	58.4	16370	15890	7940	5780	3990	14750	14270	7130	5360	3700
1	9	1	63.32	16040	11900	7780	7780	7780	14260	10680	6890	6890	6890
2	7	2	63.32	16040	15560	7780	7780	7780	14260	13780	6890	6890	6890
3	5	3	63.32	16040	15560	7780	5780	3990	14260	13780	6890	5360	3700
1	10	1	68.24	15720	10030	7620	7620	7620	13770	8670	6640	6640	6640
2	8	2	68.24	15720	14170	7620	7620	7620	13770	13080	6640	6640	6640
3	6	3	68.24	15720	15240	7620	5780	3990	13770	13290	6640	5360	3700
4	4	4	68.24	15720	15240	7620	3400	2230	13770	13290	6640	2830	1860
1	11	1	73.16	15390	8450	7450	7450	7450	13280	6960	6400	6400	6400
2	9	2	73.16	15390	11900	7450	7450	7450	13280	10680	6400	6400	6400
3	7	3	73.16	15390	14910	7450	5780	3990	13280	12800	6400	5360	3700
4	5	4	73.16	15390	14910	7450	3400	2230	13280	12800	6400	2830	1860
1	12	1	78.08	15070	7080	7290	7290	7290	12790	5460	6160	6160	6160
2	10	2	78.08	15070	10030	7290	7290	7290	12790	8670	6160	6160	6160
3	8	3	78.08	15070	14170	7290	5780	3990	12790	12310	6160	5360	3700
4	6	4	78.08	15070	14580	7290	3400	2230	12790	12310	6160	2830	1860
1	13	1	83.01	14740	5890	7130	7130	7130	12310	4130	5910	5910	5910
2	11	2	83.01	14740	8450	7130	7130	7130	12310	6960	5910	5910	5910
3	9	3	83.01	14740	11900	7130	5780	3990	12310	10680	5910	5360	3700
4	7	4	83.01	14740	14260	7130	3400	2230	12310	11820	5910	2830	1860
1	14	1	87.93	14410	4830	6970	6970	6970	11820	2930	5670	5670	5670
2	12	2	87.93	14410	7080	6970	6970	6970	11820	5460	5670	5670	5670
3	10	3	87.93	14410	10030	6970	5780	3990	11820	8670	5670	5360	3700
4	8	4	87.93	14410	13930	6970	3400	2230	11820	11340	5670	2830	1860
1	15	1	92.85	14090	3870	6800	6800	6800	11330	1840	5420	5420	5420
2	13	2	92.85	14090	5890	6800	6800	6800	11330	4130	5420	5420	5420
3	11	3	92.85	14090	8450	6800	5780	3990	11330	6960	5420	5360	3700
4	9	4	92.85	14090	11900	6800	3400	2230	11330	10680	5420	2830	1860
1	16	1	97.77	13760	3000	6640	6640	6640	10840	840	4010	5180	5180
2	14	2	97.77	13760	4830	6640	6640	6640	10840	2930	5180	5180	5180
3	12	3	97.77	13760	7080	6640	5780	3990	10840	5460	5180	5180	3700
4	10	4	97.77	13760	10030	6640	3400	2230	10840	8670	5180	2830	1860
1	17	1	102.69	13430	2200	6480	6480	6480	10350	NA	NA	4940	4940
2	15	2	102.69	13430	3870	6480	6480	6480	10350	1840	4940	4940	4940
3	13	3	102.69	13430	5890	6480	5780	3990	10350	4130	4940	4940	3700
4	11	4	102.69	13430	8450	6480	3400	2230	10350	6960	4940	2830	1860
1	18	1	107.61	13110	1460	6310	6310	6310	9860	NA	NA	4690	4690
2	16	2	107.61	13110	3000	6310	6310	6310	9860	840	4010	4690	4690
3	14	3	107.61	13110	4830	6310	5780	3990	9860	2930	4690	4690	3700
4	12	4	107.61	13110	7080	6310	3400	2230	9860	5460	4690	2830	1860
1	19	1	112.53	12780	760	4350	6150	6150	9370	NA	NA	4450	4450
2	17	2	112.53	12780	2200	6150	6150	6150	9370	NA	NA	4450	4450
3	15	3	112.53	12780	3870	6150	5780	3990	9370	1840	4450	4450	3700
4	13	4	112.53	12780	5890	6150	3400	2230	9370	4130	4450	2830	1860
2	18	2	117.45	12450	1460	5990	5990	5990	8890	NA	NA	4200	4200
3	16	3	117.45	12450	3000	5990	5780	3990	8890	840	4010	4200	3700
4	14	4	117.45	12450	4830	5990	3400	2230	8890	2930	4200	2830	1860
2	19	2	122.38	12130	760	4350	5820	5820	8400	NA	NA	3960	3960
3	17	3	122.38	12130	2200	5820	5780	3990	8400	NA	NA	3960	3700
4	15	4	122.38	12130	3870	5820	3400	2230	8400	1840	3960	2830	1860
3	18	3	127.3	11800	1460	5660	5660	3990	7910	NA	NA	3710	3700
4	16	4	127.3	11800	3000	5660	3400	2230	7910	840	3710	2830	1860
3	19	3	132.22	11480	760	4350	5500	3990	7420	NA	NA	3470	3470
4	17	4	132,22	11480	2200	5500	3400	2230	7420	NA	NA	2830	1860
4	18	4	137,14	11150	1460	5330	3400	2230	6930	NA	NA	2830	1860
4	19	4	142,06	10820	760	4350	3400	2230	6440	NA	NA	2830	1860

Maximum load – Twin mast configuration and drive unit type APF-50 B



Nc	=	Number of cantilever platform sections
Nm	=	Number of midspan platform sections
L	=	Platform length
T	=	Total payload capacity (optimized load distribution)
Tm	=	Midspan load, evenly distributed
Tmis	=	Maximum concentrated load on midspan innermost platform section

The sum of the two cantilever loads Tmis must never exceed the total payload capacity T for the platform configuration in question.

Metric units

Aliclimber APF-50B Twin				Without platform extension					With platform extension				
Nc left	Nm mid.	Nc right	L m	T kg	Tm kg	Tmis kg	Tc kg	Tos kg	T kg	Tm kg	Tmis kg	Tc kg	Tos kg
0	4	0	6.0	8580	8580	4290	0	0	8290	8290	4140	0	0
0	5	0	7.5	8430	8430	4220	0	0	8070	8070	4030	0	0
0	6	0	9.0	8290	8290	4140	0	0	7840	7840	3920	0	0
0	7	0	10.5	8140	7710	4070	0	0	7620	7280	3810	0	0
0	8	0	12.0	7990	6420	3990	0	0	7400	5930	3700	0	0
0	9	0	13.5	7840	5390	3920	0	0	7180	4840	3590	0	0
0	10	0	15.0	7690	4550	3850	0	0	6960	3930	3480	0	0
0	11	0	16.5	7550	3830	3770	0	0	6740	3150	3370	0	0
0	12	0	18.0	7400	3210	3700	0	0	6510	2480	3260	0	0
0	13	0	19.5	7250	2670	3620	0	0	6290	1870	3150	0	0
0	14	0	21.0	7100	2190	3550	0	0	6070	1330	3040	0	0
0	15	0	22.5	6950	1750	3480	0	0	5850	830	2920	0	0
0	16	0	24.0	6810	1360	3400	0	0	5630	380	1810	0	0
0	17	0	25.5	6660	1000	3330	0	0	5410	NA	NA	0	0
0	18	0	27.0	6510	660	3250	0	0	5180	NA	NA	0	0
0	19	0	28.5	6360	350	1970	0	0	4960	NA	NA	0	0

Imperial units

Aliclimber APF-50B Twin				Without platform extension					With platform extension				
Nc left	Nm mid.	Nc right	L ft.	T lbs.	Tm lbs.	Tmis lbs.	Tc lbs.	Tos lbs.	T lbs.	Tm lbs.	Tmis lbs.	Tc lbs.	Tos lbs.
0	4	0	19.69	19400	18920	9460	0	0	18750	18270	9130	0	0
0	5	0	24.61	19070	18590	9300	0	0	18260	17780	8890	0	0
0	6	0	29.53	18750	18260	9130	0	0	17770	17290	8650	0	0
0	7	0	34.45	18420	17000	8970	0	0	17290	16050	8400	0	0
0	8	0	39.37	18090	14160	8810	0	0	16800	13080	8160	0	0
0	9	0	44.29	17770	11890	8640	0	0	16310	10670	7910	0	0
0	10	0	49.21	17440	10020	8480	0	0	15820	8670	7670	0	0
0	11	0	54.13	17120	8440	8320	0	0	15330	6950	7420	0	0
0	12	0	59.06	16790	7080	8150	0	0	14840	5460	7180	0	0
0	13	0	63.98	16460	5890	7990	0	0	14350	4130	6940	0	0
0	14	0	68.90	16140	4820	7830	0	0	13870	293	6690	0	0
0	15	0	73.82	15810	3870	7660	0	0	13380	1840	6450	0	0
0	16	0	78.74	15480	3000	7500	0	0	12890	830	4000	0	0
0	17	0	83.66	15160	2200	7340	0	0	12400	NA	NA	0	0
0	18	0	88.58	14830	1450	7170	0	0	11910	NA	NA	0	0
0	19	0	93.50	14510	760	4340	0	0	11420	NA	NA	0	0

The weight of 4 people including equipment 400 kg (882 lbs.) may be added to the above loads. Allowable personal items, tools, paint etc. for each person is 20 kg (44 lbs.).

Maximum no. of persons allowed on the Work Platform

With loads according to load tables the number of persons allowed on the platform is:

– single mast platform = **two (2)**
– twin mast platform = f**our (4)**

Single mast platform

A maximum of four (4) people are allowed on the platform provided that the load **T** is reduced by 115 kg **(250 lbs.)** and Tc by 210 kg **(460 lbs.)** for each person exceeding two (2).

Twin masted platform

A maximum of six (6) people are allowed on the platform provided that the load **T** and **Tc** are reduced by 230 kg **(500 lbs.)** and **Tm** by 250 kg **(550 lbs.)** for each person exceeding four (4).

Load on work platform when crane is used

Max. load on work platform, when erection crane is used shall be reduced by the weight of the crane;

78 kg **(172 lbs.)** for manually or
85 kg **(188 lbs.)** for electrically operated crane.

Free standing on mobile chassis

The work platform may be used free standing on mobile chassis under the following conditions:

In service maximum wind speed 12.7 m/sec. **(28 mph)**

Out of service maximum wind speed 40 m/sec. **(90 mph)** exposure A and B according to EN 1495 and ASCE 7-93.

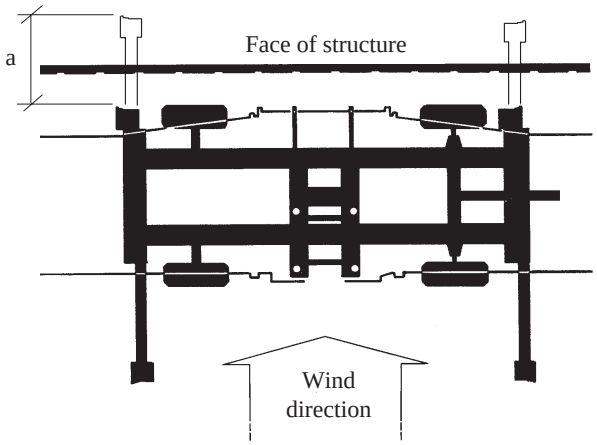
Allowed max. freestanding mast height – In service / Out of service

CAUTION: Note that the outriggers on the opposite side of the face of the structure must always be completely extended and locked.
The mast MUST ALWAYS be tied when using the canopy.

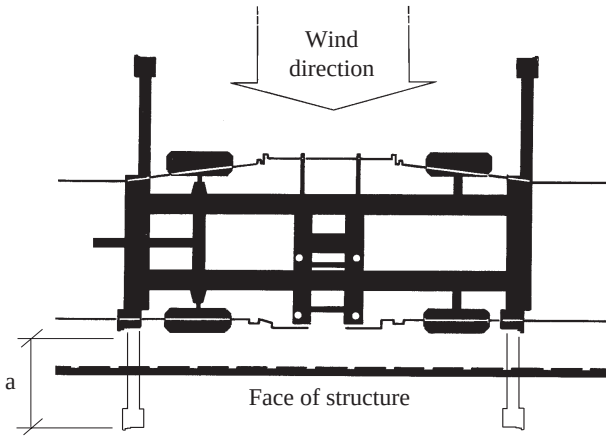
Outriggers extended length a	Mast turned FROM the structure face without platform extension	with maximum platform extension
0.0 m	8.5 m **(28 ft.)**	8.5 m **(28 ft.)**
0.5 m **(1.5 ft.)**	13.0 m **(43 ft.)**	13.0 m **(43 ft.)**
1.0 m **(3 ft.)**	18.0 m **(60 ft.)**	18.0 m **(60 ft.)**

CAUTION: If the structure is ”open” and the wind direction can be the opposite, the following values must be used.

~~1.0 m **(3 ft.)**~~	~~18.0 m **(60 ft.)**~~	~~18.0 m **(60 ft.)**~~
1.0 m **(3 ft.)**	14.5 m **(48 ft.)**	14.5 m **(48 ft.)**



Outriggers extended length a	Mast turnedTOWARDS the structure face without platform extension	with maximum platform extension
0.0 m	5.5 m **(18 ft.)**	–
0.5 m **(1.5 ft.)**	10.0 m **(33 ft.)**	10.0 m **(33 ft.)**
1.0 m **(3 ft.)**	14.5 m **(48 ft.)**	14.5 m **(48 ft.)**

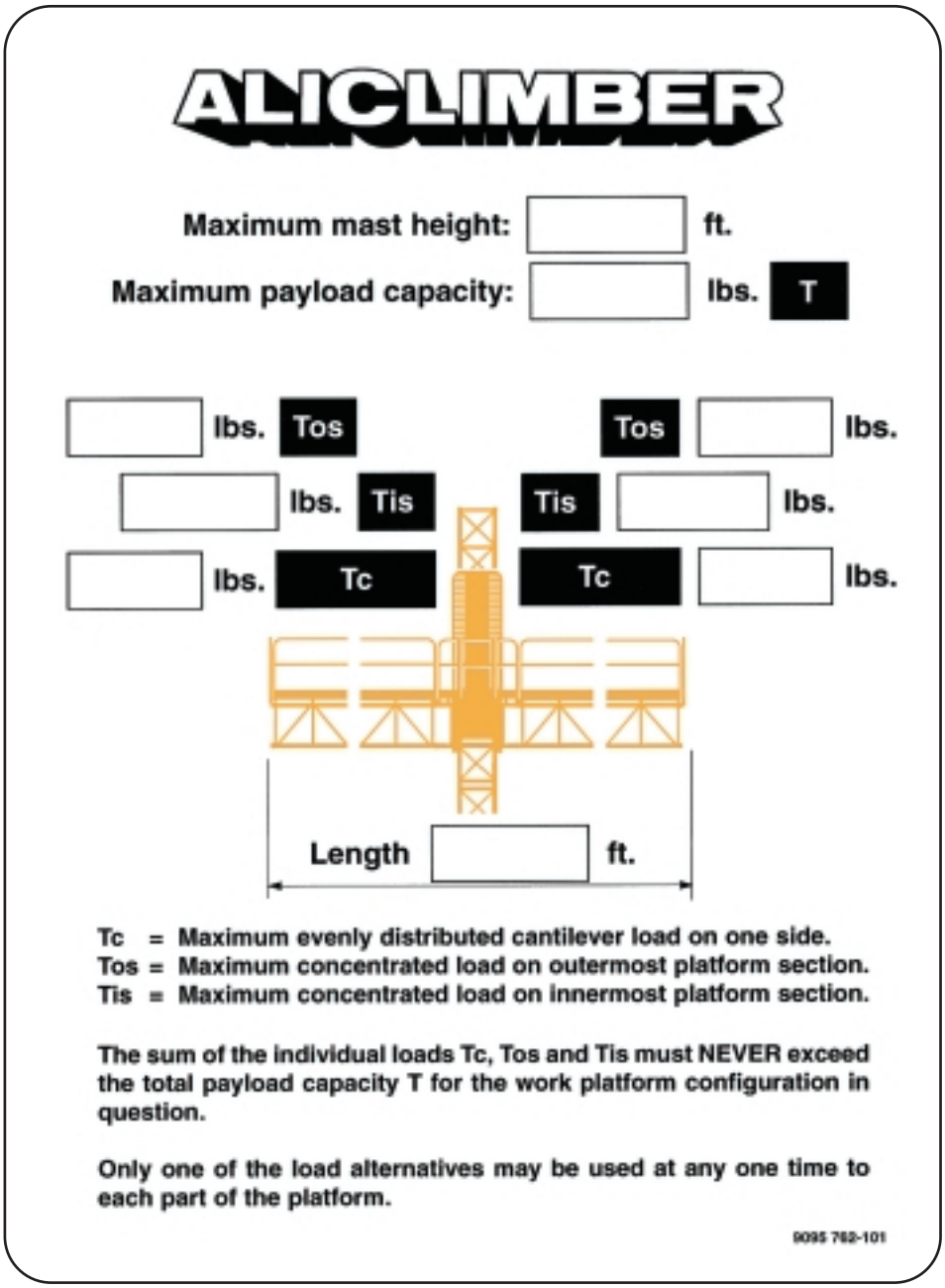


Load signs

Rated load sign on the platform

Copy of each of following signs showing platform configuration, rated load and outrigger arrangements, must be completed by user or authorized installer of the platform and be mounted in a prominent place on the platform, near the platform control panel.

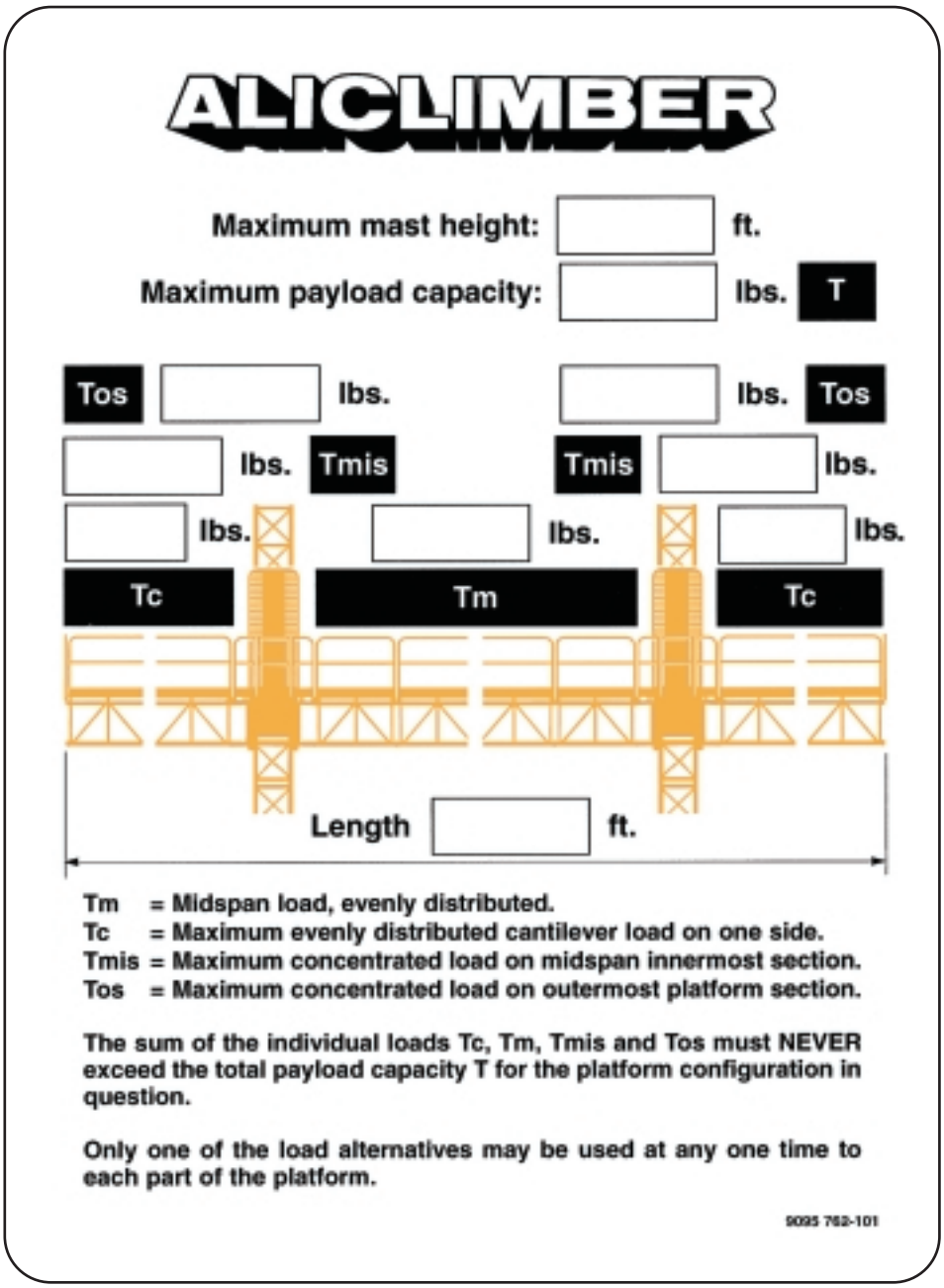
Load sign for APF-50 A, single mast platform



To enable re-use of the data sign it is adviseable to fill in the data with a lead pencil or erasable instrument.

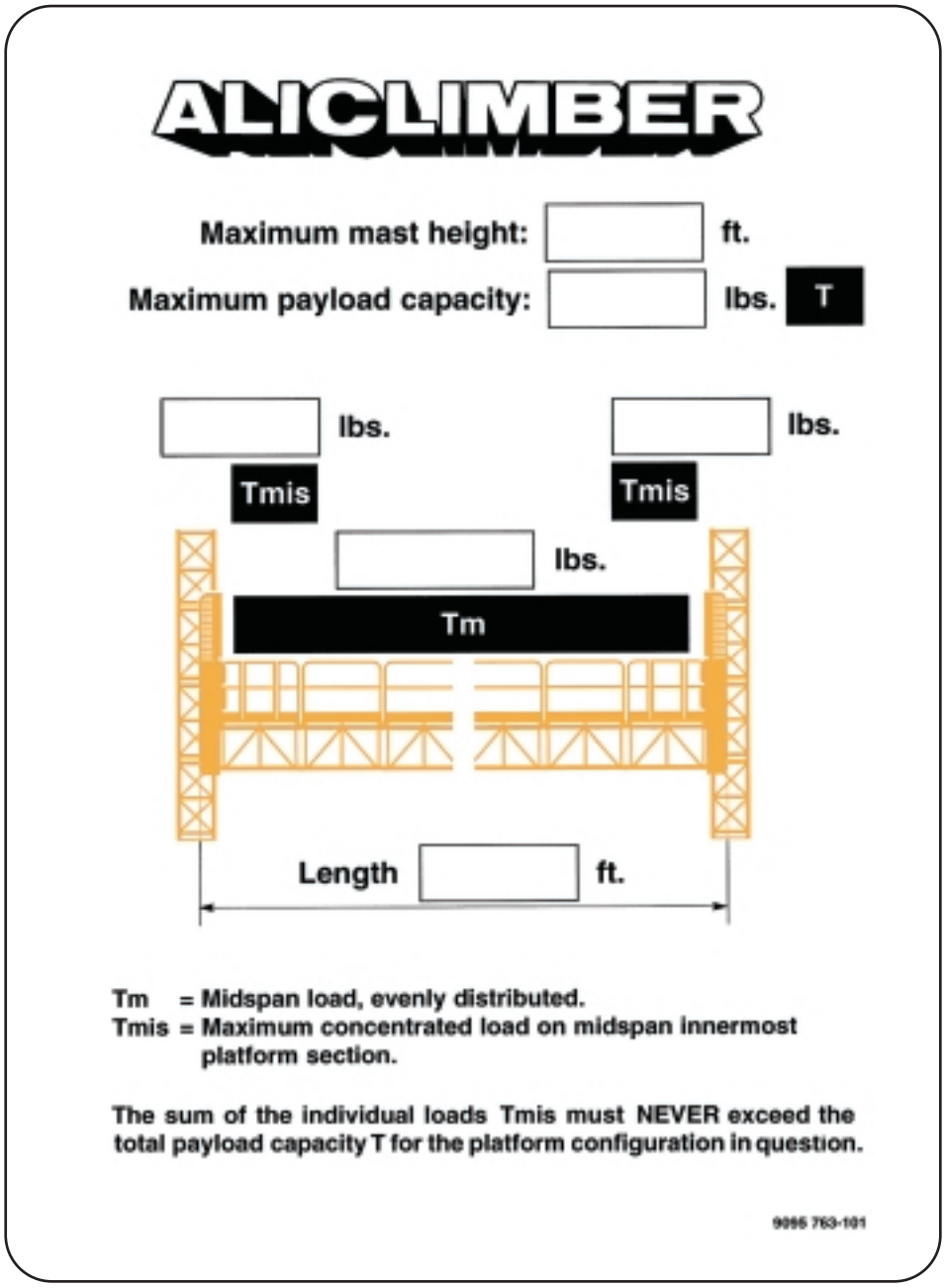
Data on information sign must be in accordance with technical data and additional technical information presented in this manual.

Load sign for APF-50 A, dual mast platform

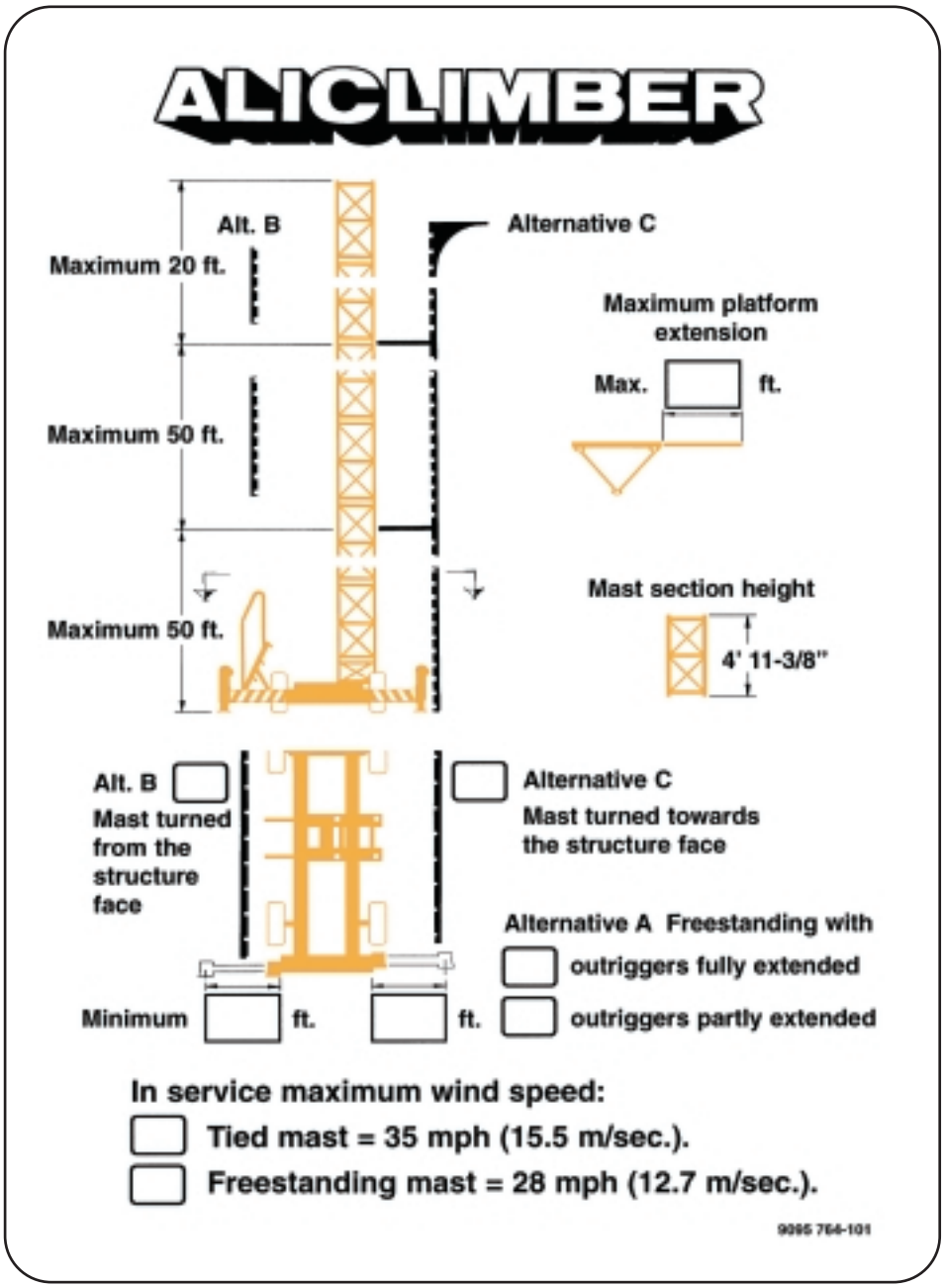


Load signs are available for both Metric and Imperial units.

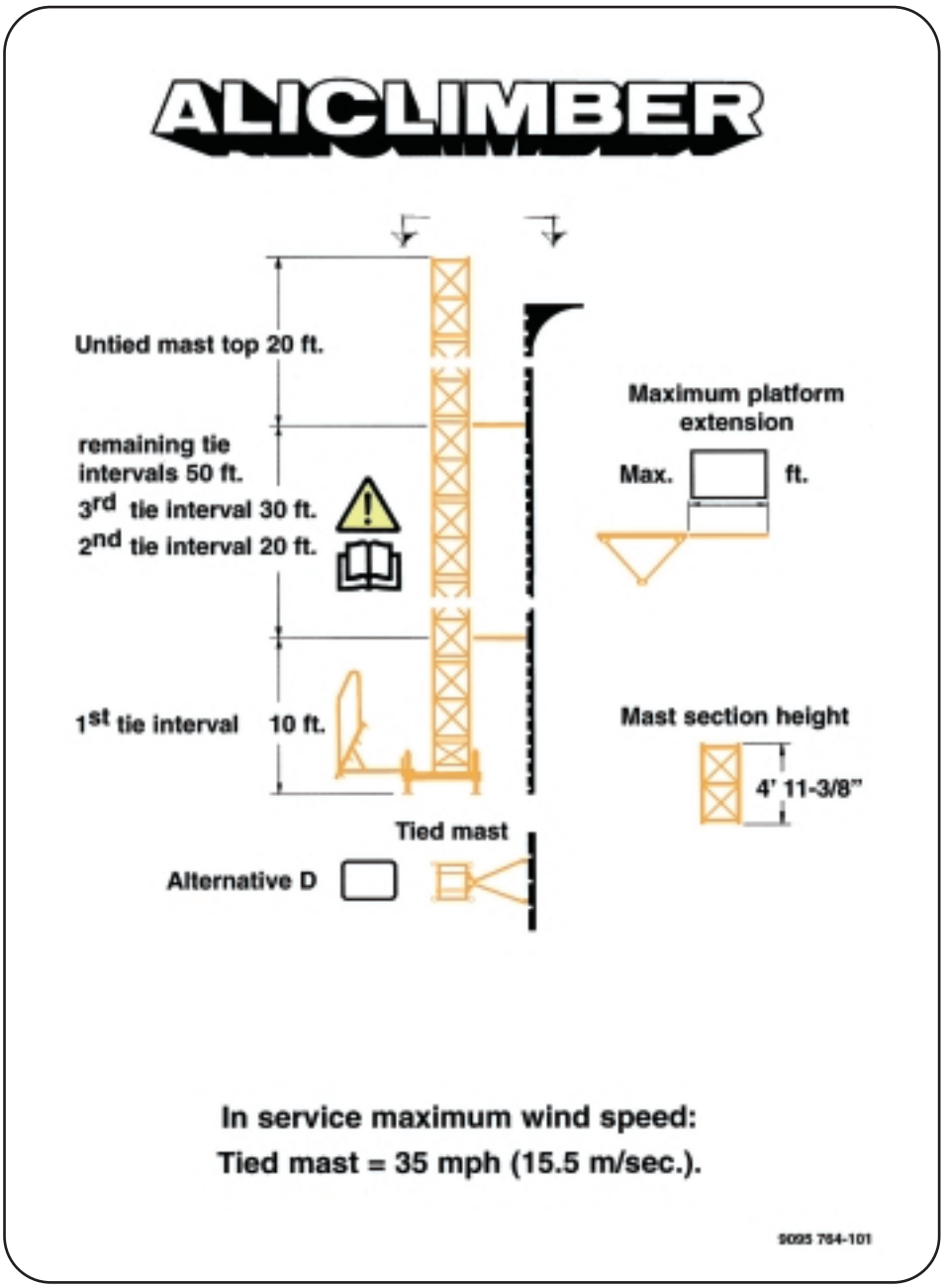
Load sign for APF-50 B, dual mast platform



Base arrangement sign – mobile chassis

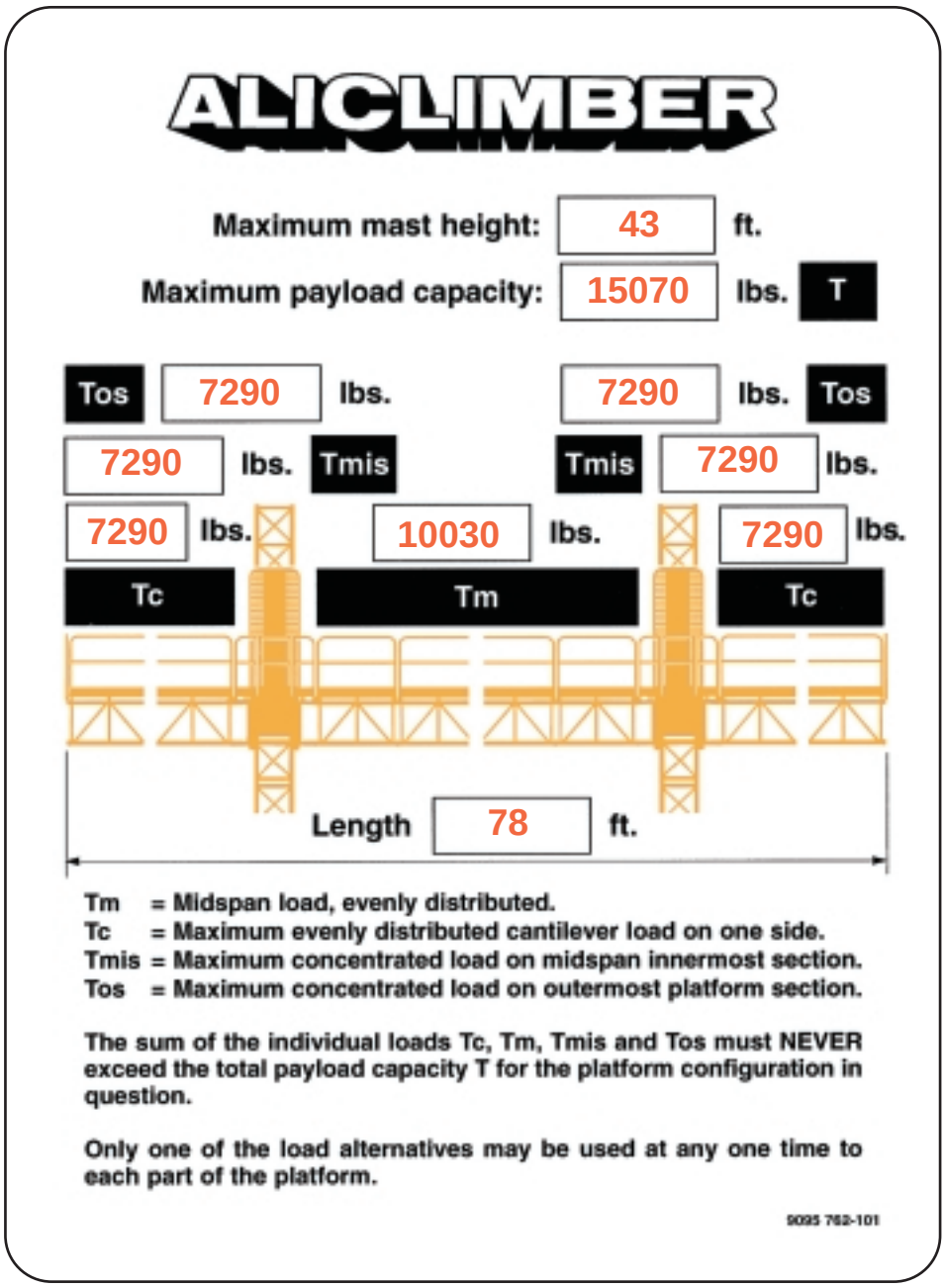


Base arrangement sign – pedestal base

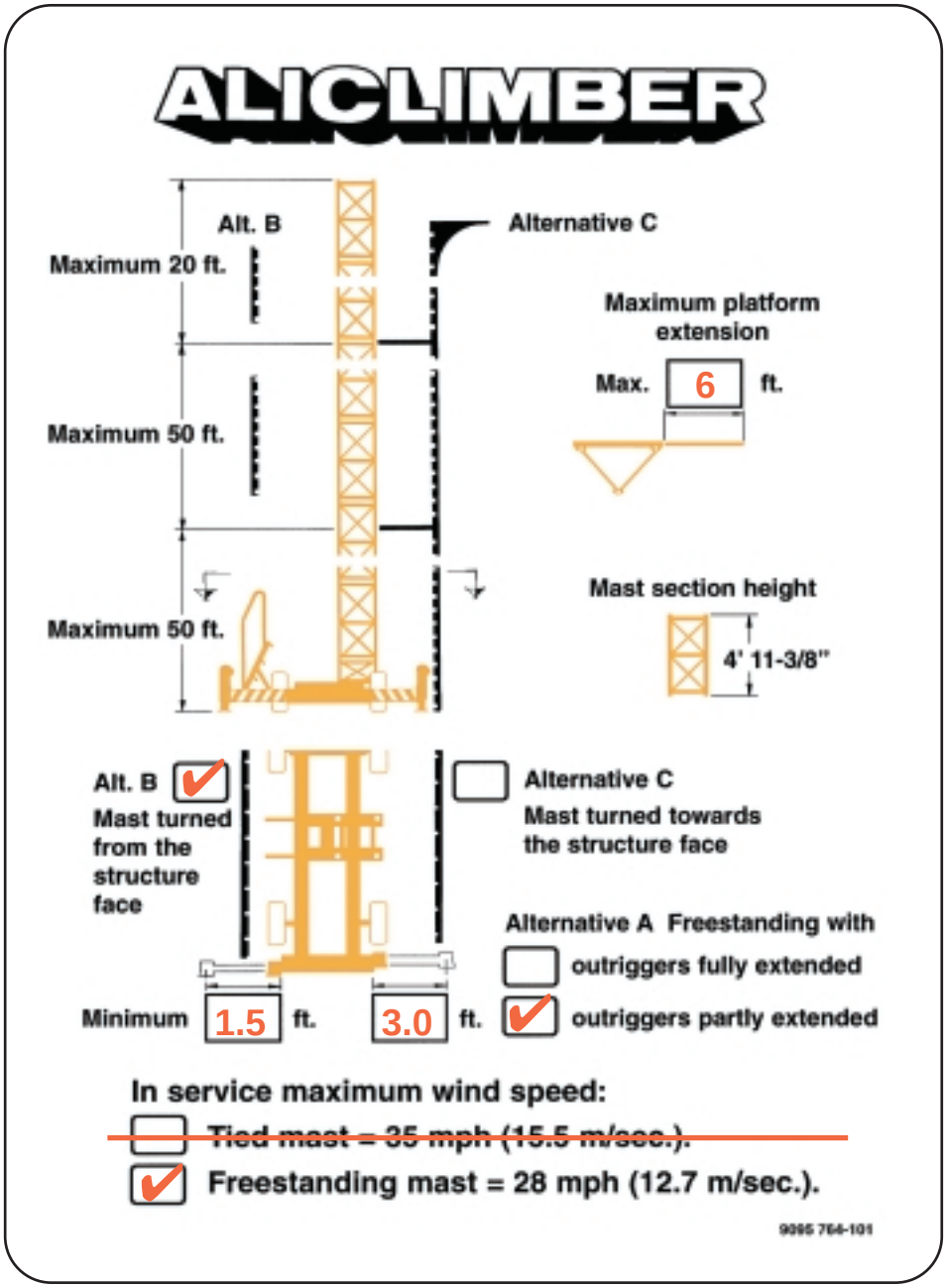


Example:

Drive unit type APF-50A. Dual mast installation.
Platform length 78 ft. Load capacity according to page B 9.
Freestanding mast with outriggers partly extended.
Mast turned from the structure face. See page B 13.
Maximum 6 ft. platform extension.



Example continue



Determin mast height

Lh = Lifting height

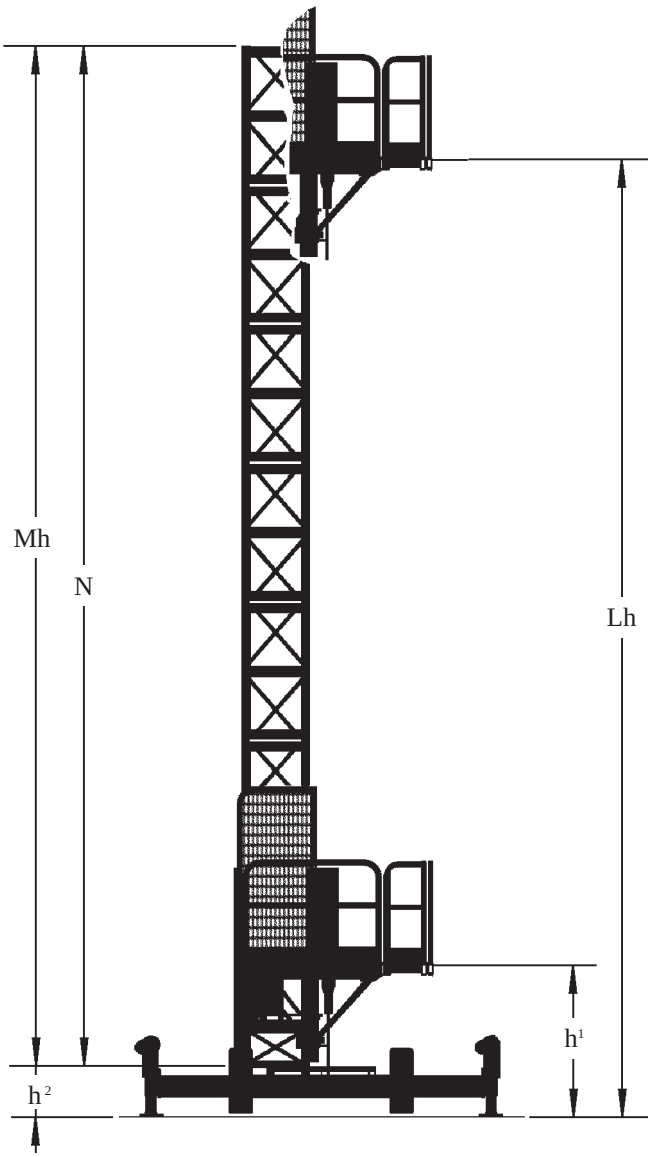
Mast section length = 1.508 meter = **(59.37")**

N = No. of mast sections = $\frac{\text{Lh + 1.3 meter}}{1.508}$ = $\frac{\textbf{(Lh + 39.37")}}{\textbf{(59.37")}}$

Mh = Mast height = h^1 + N x 1.508 meter
= **(h^1 + N x 59.37")**

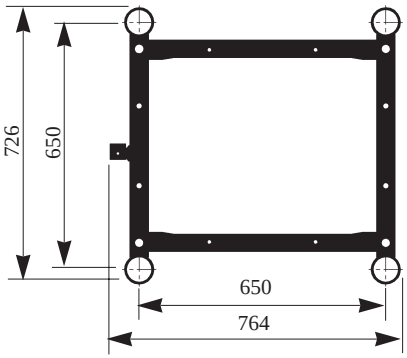
Working height = Lh + 1.5 meter = **(Lh + 59.37")**

Alternative	**height h^1**	**height h^2**
mobile chassis	1550 mm **(61 in.)**	465 mm **(19 in.)**
pedestal base	1250 mm **(49-1/4 in.)**	275 mm **(11 in.)**



Data – mast

Length/height:	1508 mm	**(4 ft. 11 3/8 in.)**
Weight:	112 / 128 kg	**(247 / 282 lbs.)**
Mast bolt dimensions:	1’’ UNC – quality minimum 8.8 or **(A325)**	
Tightening torque:	350 Nm	**(258 lbf x ft)**



Plan

Mast expansion/contraction

The expansion/contraction of the mast is: 0.012 mm/m and degree °C **(or 0.000008 in./ft. and degree °F).**

Noise level at operation

Measuring standard: IEC 651

Less than 85 dB(A).

Operating requirements ..... **C 1**
Operator requirements ..... **C 2**
Important safety instructions ..... **C 3**

Operating personnel requirements

User Requirements

The information in this manual must be supplemented with good job management, site safety regulations, training, proper installation, inspections, maintenance, consistent with all available technical data found in this manual. Since the user/owner has direct control over the application and operation of the Alimak Work Platform, conformance with good safety practices is the direct responsibility of the user/owner and operating personnel. As the Mast Climbing Work Platform will be carrying personnel, decisions on the use and operation of the equipment must take this into account relative to their safety.

Maintenance training

The user must train their maintenance personnel in inspection, erection and maintenance of the Alimak Platform in accordance with this Instruction Manual and with the manufacturer´s recommendations.

Operator training

Whenever a user directs an individual to operate a Alimak Platform, they shall ensure that the individual has been trained in accordance with the manufacturer´s Operating and Maintenance Manual, and the user´s work instructions and requirements listed in sections of this Instruction Manual before operating the Alimak Platform.

Model training

The user shall be responsible for the operator being trained on the model of the Alimak Platform that will be operated. Such training shall be in an area free of obstructions, under the direction of a qualified person to determine that the trainee displays full knowledge in the operation of the Alimak Platform. Only authorized and properly trained personnel shall be permitted to operate the Alimak Platform. Such a person must always be located on the platform during its use.

Before operation

Before authorizing an operator to operate a Alimak Platform, the user shall ensure that the operator has:

– been instructed by a qualified person in the intended purpose and function of each control;

– has read and understood the latest manufacturer´s operating instructions and user´s safety rules, or been trained by a qualified person on the contents of the manufacturer´s operating instructions and user´s safety rules;

– understood all decals, warnings, and instructions signs displayed on the Alimak Platform;
– determined that the purpose for which the Alimak Platform is to be used is within the scope of the intended applications defined by the manufacturer.

Operator Requirements

The information in this Instruction Manual must be supplemented by good judgement, site safety regulations, and caution in evaluating each situation. Since the operator has direct control of the Alimak Platform, strict conformance with good safety practices in this area is the responsibility of the operator. The operator must make decisions on the use and operation of the Alimak Platform with due consideration that his own safety as well as the safety of other personnel on and around the platform is dependent on these decisions.

Instruction Manual

The operator shall be aware that the Instruction Manual is stored on the Alimak Platform and the location where it is stored. The operator shall be familiar with this and consult the manual when questions arise with respect to the Alimak Platform.

Training

The operator shall have been trained either on the same model of a Alimak Platform or one having operating characteristics and controls consistent with the one to be used during actual work site operation. The operator trainee shall operate the Alimak Platform in an area free of obstructions under the direction of a qualified person for a sufficient time to determine that the trainee displays proficiency in knowledge and actual operation of the Alimak Platform. Only authorized properly trained personnel shall be permitted to operate the Alimak Platform.

Before operation

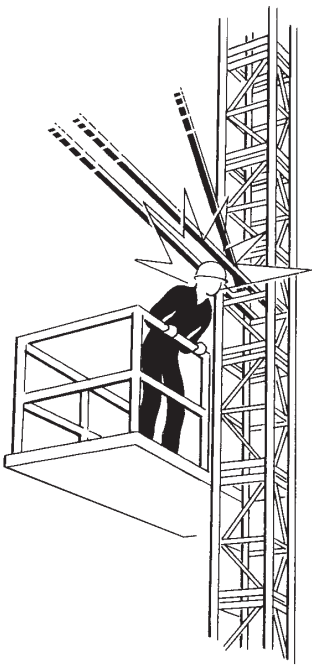
Before being authorized to operate the Alimak Platform, the operator shall have:

– been instructed by a qualified person in the intended purpose and function of each of the controls
– read and understood the manufacturer´s/owner´s operating instructions and safety rules, or been trained by a qualified person on the contents of the manufacturer´s/owner´s operating instructions and safety rules.
– understood by reading or having a qualified person explain all decals, warnings, and instructions signs displayed on the Alimak Platform.

Important Safety Instructions

Over the years serious accidents have occurred during the erection and dismantling of rack and pinion equipment.

Common to these accidents has been the ”human factor”, i.e. non adherence to proper safety procedures and common sense.



c 5

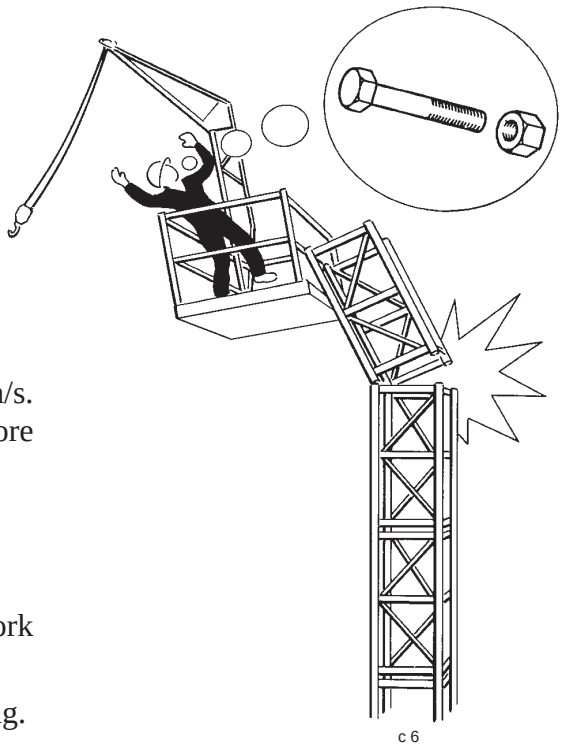
Some examples:

Leaning over the safety railing while the platform is moving upwards can cause you to be struck by a tie or other protruding objects.

Incomplete installation of mast bolts can cause separation of the mast sections, leading to the fall of the platform with subsequent loss of life or serious injuries.

Avoid the risk of accidents by carefully studying these instructions regularly. Think clearly! Do not rush the work and always check to make certain that the work is being done properly.

SAFETY FIRST!



c 6

Safety Instructions

Local Safety Regulations

– All local regulations shall apply.

Weather Conditions

– Do not erect or dismantle if wind speed exceed 12 m/s. **(26 mph)** or as governed by local regulations where more stringent.

Preparation

– Read and understand the Instruction Manual before work begins.

– Barricade or rope off the area before erecting or dismantling.

– Do not allow unauthorized personnel on or around the platform during erection or dismantling.

Safety Equipment and Protective Clothing

– Prescribed safety equipment and clothing such as hard hat, safety shoes, fall arresting device shall be used.

– Loose fitting clothes such as scarves must not be used as they might become entangled in moving parts.

General

– Read all Warning and Instruction Signs.

– Keep the work area clean. Any oil spillage must be removed immediately to avoid the risk of slipping.

– Never climb on the mast.

– During mast erection, dismantling or hoistway inspection, the machine must always be operated from the platform.
When working from the platform take precautions to avoid being struck by balconies, scaffolds and other similar obstructions while platform is moving.

– When the control equipment on the platform is to be left temporarily during installation/dismantling or service, the main switch on the electric panel must be switched off locked, and tagged in order to ensure no accidental movement of the platform.

– Under no circumstances shall the platform be driven if there is any one on the mast or below the platform.

– Complete each item of work before starting a new one or taking a break. This is especially important when bolting mast sections and installing ties.

Mast and Mast Ties

– The maximum tie distance must not be exceeded.

– The platform shall not be clad or encumbered with signs, banners and similar items which will increase the wind area of the platform, and thereby negatively affect its stability.

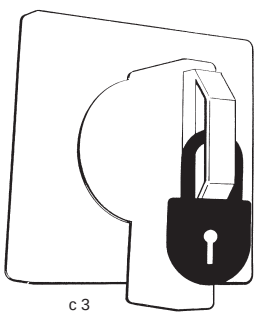
– Bolted joints shall always be tightened to the required torque as prescribed in the Instruction Manual.

– If any structural damage or severe corrosion is seen on such items as mast sections, mast ties or other load carrying members, the platform must be immediately taken out of service and the extent of the damage be determined.
Corrective action must be taken before the platform is put into service again.

Electrical Power

– Work performed on electrical equipment must be carried out by competent personnel, trained for such work. The power supply must be switched off locked and tagged, before work is performed.

Always lock the main ”ON/OFF” switch with a padlock and tag to prevent unintentional operation while service/ inspection work is carried out.



c 3

The main ”ON/OFF” switch must be in the ”OFF” position before the panel door can be opened.

Safe distance to dangerous high voltage cables

– Follow the table below to find the minimum allowed safe distance between any part of the machine and any current carrying high voltage power cable. Also conform to local regulations where more stringent.

Voltage range (phase to phase)	Minimum safe approach distance meters	feet
0 to 300V	Avoid contact	
Over 300V to 50kV	3.0	10
Over 50kV to 200kV	4.5	15
Over 200kV to 350kV	6.0	20
Over 350kV to 500kV	8.0	25
Over 500kV to 750kV	11.0	35
Over 750kV to 1000kV	14.0	45

Illumination

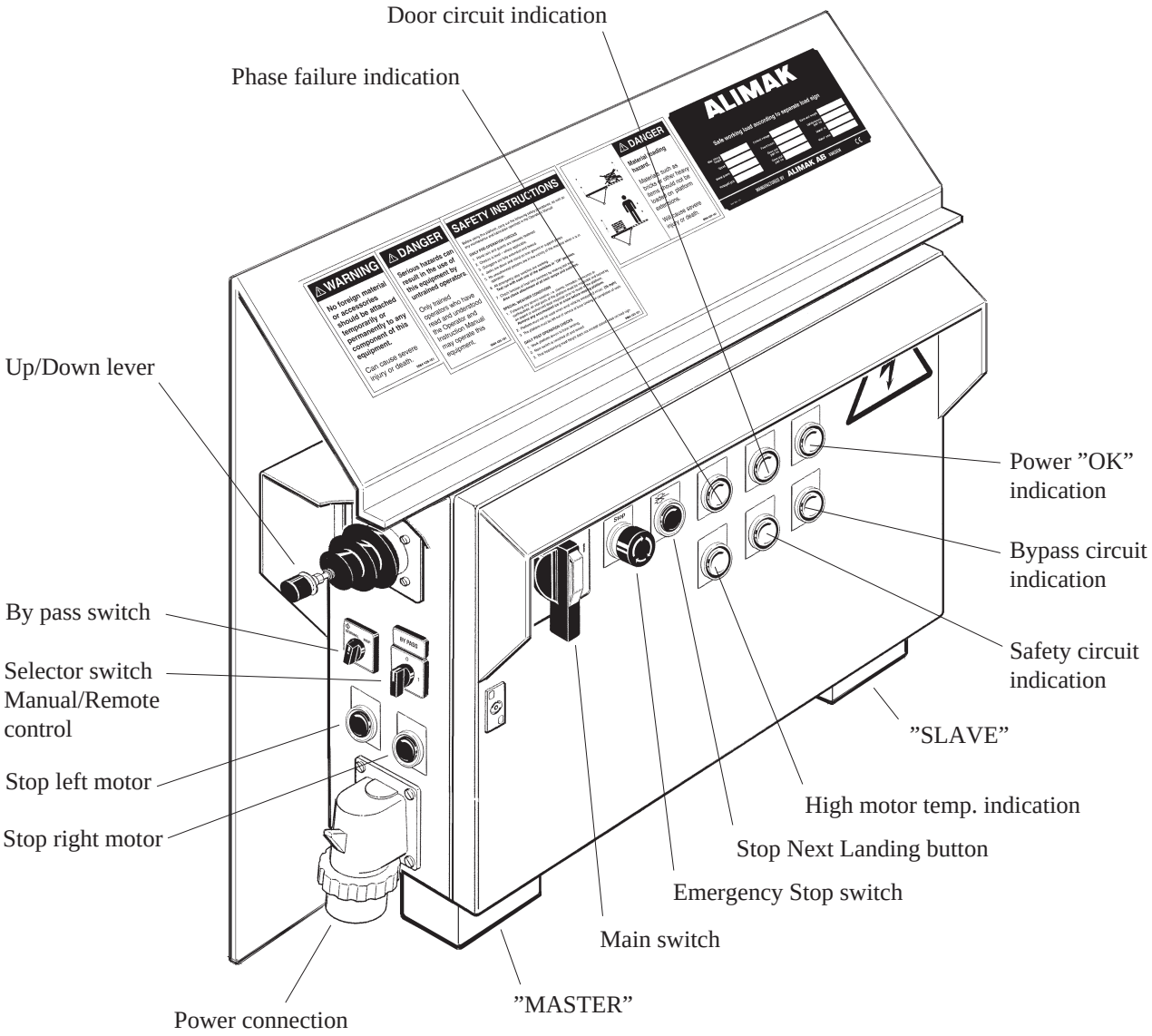
– Adequate lighting shall be provided to illuminate the site over the full travelling height of travel of the platform.

Lightning

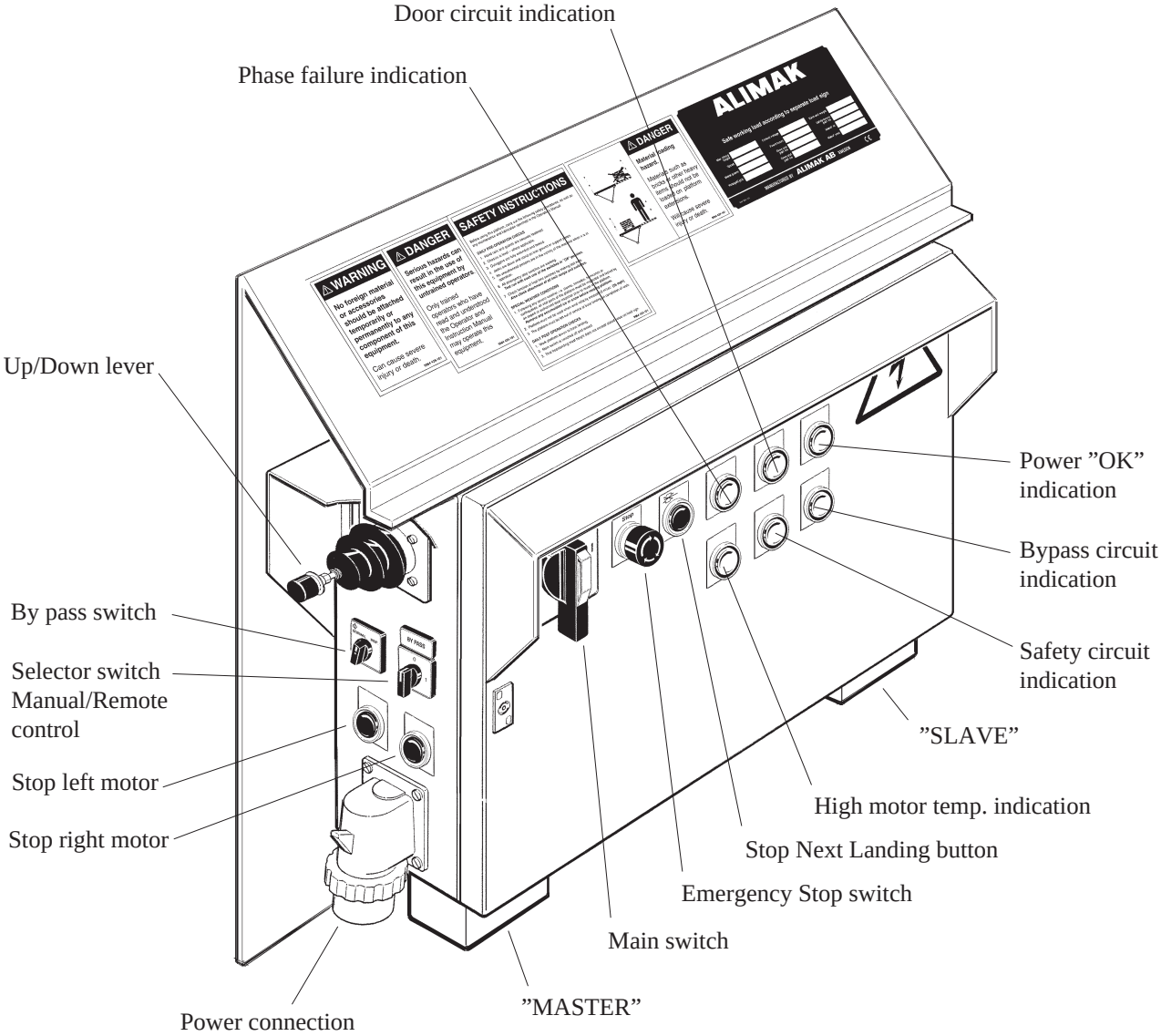
– The work platform shall be earthed (grounded) so that the charge from a lightning strike is connected to earth. Personnel shall not be on the platform during such weather.

Spare Parts

– Unauthorized spare parts are not to be used. Only ”Alimak Genuine Spare Parts” are to be installed.


Door circuit indication
Phase failure indication
Up/Down lever
By pass switch
Selector switch
Manual/Remote
control
Stop left motor
Stop right motor
Power connection
”MASTER”
Main switch
Emergency Stop switch
Stop Next Landing button
High motor temp. indication
”SLAVE”
Safety circuit
indication
Bypass circuit
indication
Power ”OK”
indication
ALIMAK
WARNING
DANGER
SAFETY INSTRUCTIONS
BY PASS
STOP

Instructions for use ..... **D 1**
Operating instructions ..... **D 2**
At the end of the shift ..... **D 3**
If the platform does not start ..... **D 3**
If the platform suddenly stops ..... **D 4**
If the platform has been driven ..... **D 7**
on the final limit cam



M-panel located on platform

Instructions for use

Instructions for the user/operator on how the equipment is to be operated are presented below. These instructions will also be found on a sign on the platform.

Illegible and missing signs must be replaced!

SAFETY INSTRUCTIONS

Before using this platform, carry out the following safety procedures, as well as any maintenance and lubrication specified in the Operator's Manual.

DAILY PRE-OPERATION CHECKS

1. Hand rails and guards are securely fastened.
2. Chassis / pedestal base is level.
3. Outriggers are fully extended and locked.
4. Jacks are down and stand on firm ground or support plates.
5. No unauthorized persons are in the vicinity of the machine when it is in operation.
6. All emergency stop switches are working.
   Test run with each one of the switches in "Off"-position.
7. Final limit switch is working.
   Test run to check for proper function.
8. Also check attachment of all limit cams and switches.

SPECIAL WEATHER CONDITIONS

1. Following any severe weather, i.e. storms, tornados, hurricanes or earthquakes, all vital parts of the platform must be inspected and tested by an expert or authorized local inspector prior to reuse of the platform.
   Remove any accumulated ice or snow before reusing platform.
2. Platform with mast tied to building must not be used when wind velocity exceeds15.5 m/sec. **(35 mph).**
3. Free-standing platform must not be used when wind velocity exceeds 12.7 m/sec. **(28 mph).**
4. The platform must be locked out of service at the base landing on completion of work.

DAILY POST OPERATION CHECKS

1. Work platform has been driven to base landing.
2. Main switch is switched off and locked out.
3. Freestanding mast height does not exceed value on load sign.

Note that the operator/user is responsible for ensuring that the daily "Safety Inspection" has been carried out BEFORE the platform is put into service.

Operating instructions

Operating instructions for Work Platform

1. Observe and study the safety instructions.
2. Take necessary measures to avoid risks of slipping if the working platform floor, staircase etc. is covered with oil, snow/ice or frost.
3. The area below the platform must be barricaded to prevent injury to personnel on the ground due to the possibility of falling objects.
4. Unlock and remove the padlock from the main switch.
5. Turn the main ON/OFF switch(es) on the platform to position ”ON”.
6. Load the platform. Do not overload and do not place the load outside platform railing.
7. Make certain that the load signs show the actual platform configuration.
8. Close the safety railing gate(s) fully.
9. Check for obstacles in the path of travel of the platform.

   When extension parts are used in connection with tied mast, special attention must be observed so that the passage is free for the platform.

   Keep this constantly under observation.
10. Move the lever to the symbol for the desired direction of travel. The platform will now start moving.

    Stop the platform by carefully moving the lever to the Neutral” position

    At the top and bottom the platform will stop automatically by means of the normal limit switches.
11. On the way down check that the machine´s audible warning signal is in operation.
12. Turn the main ON/OFF switch(es) on the platform to position ”OFF”.

At the end of the shift

1. Drive the platform to the base.
2. Switch off and lock the main switch with a padlock to prevent unauthorized use.

Operating instructions for mobile chassis

– see chapter L ”Transports and movements”

Platform with mast tied to building

The work platform may be used under the following conditions:

In service maximum wind speed 15.5 m/sec. **(35 mph).**

Out of service maximum wind speed 36 m/sec. **(90 mph)** exposure A and B according to ASCE 7-93.

Free standing on mobile chassis

The work platform may be used free standing on mobile chassis under the following conditions:

In service maximum wind speed 12.7 m/sec. **(28 mph)**

Out of service maximum wind speed 40 m/sec. **(90 mph)** exposure A and B according to ASCE 7-93.

DANGER !

Tipping hazard.

Never use the work platform with free standing mast when wind velocity exceeds 12.7 m/sec **(28 mph).**

Will cause severe injury or death.

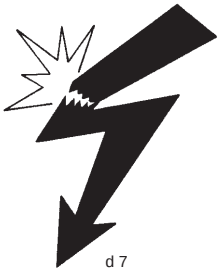
Enlarged wind areas

No foreign material or accessories should be attached temporarily or permanent to any component of this equipment.

If the platform does not start – check:

- that the main ON/OFF switch (switches) on the platform is in the ON position and that the platform is supplied with electric power.
- that no “Emergency Stop Push Button” is in their depressed position.
- that the entrance gate(s)/load ramp(s) are closed.
- that the final limit switch (switches) are not activated. If a final limit switch is activated – see heading “If the platform has been driven against the lower final limit cam”.
- that the circuit breaker (breakers) for control power have not tripped out.
- that the phase sequence is correct (the lamp on the M-panel should not be lit).

If the platform still does not start, see the instructions in the section ”Electrical trouble-shooting”.



d 7

If the platform suddenly stops

If the platform stops due to a power failure or any other electric failure, such as blown fuses, tripped motor overload protector, etc., it can be manually lowered for unloading.

Slide the platform only short distances at very low speed in order not to exceed the normal operating speed of the platform. If excess speed occurs, the platform's safety device will automatically trip and stop the platform.

If the safety device trips during sliding

There is NO power to the drive motor

1. Crank the platform approximately 20 cm **(8 in.)** upwards according to the instructions "Cranking" to release the mechanism of the safety device.
2. Try to slide the platform again.

There is power to the drive motor – or power is back after a short interruption

1. Run the platform up approximately 20 cm **(8 in.)** according to the instructions "Emergency Electrical Operation" to release the mechanism of the safety device.
2. Try to slide the platform again.

The safety device can be allowed to trip 2 to 3 times – before it MUST be reset to neutral position

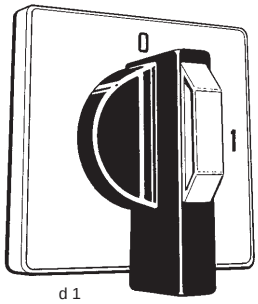
The reason why the safety device must be reset is that the brake cone after each tripping will be forced tighter against the brake lining, stopping distance will be decreased and braking more abrupt.

Note that the safety device MUST be reset at the ground landing !

See next page for sliding instructions.

Sliding

1. First check applicable items under the heading **”If the platform doesn’t start – check”.**
2. Turn off the main ON/OFF switch on the electrical M-panel.



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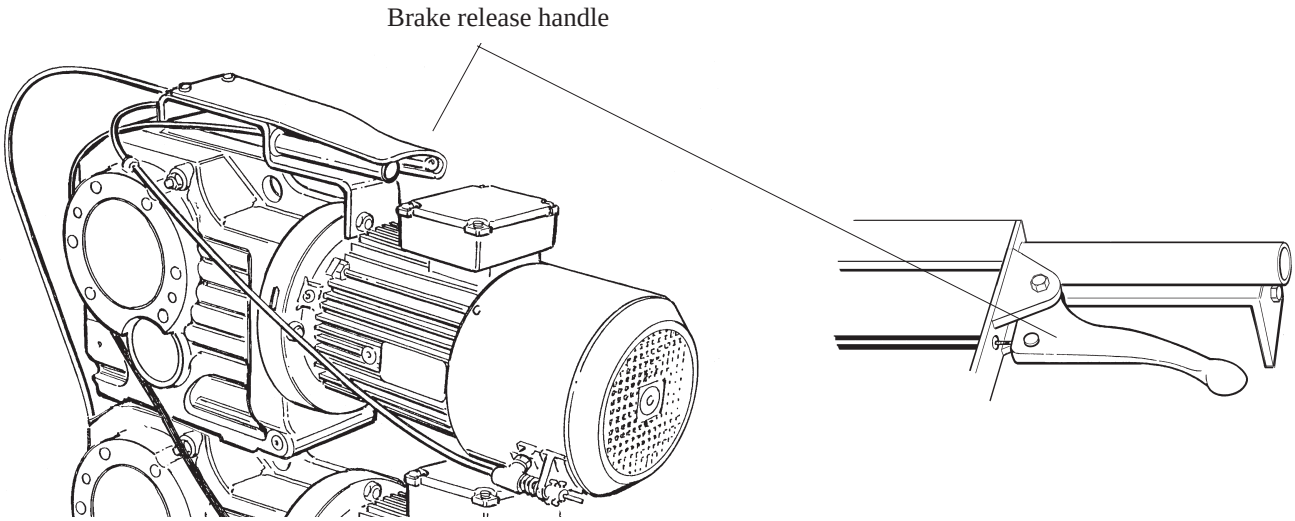
Work platform in single configuration

– Squeeze the handle underneath the rubber protection on top of the drive unit to lift the motor brakes and start sliding.

The platfrom will stop as soon as you release the handle.



Work platform in twin configuration

– Squeeze the handle to slide – until the horizontal levelling equipments’ Teleflex cable activates the brake. Follow the same procedure with the other drive unit, and continue this (back and forth) until the desired level is reached.

If there is more than one person on the platform it is possible to slide both drive units at the same time. The horizontal levelling equipment will automatically compensate for speed differences by setting the corresponding brake until the other drive unit catches up.

CAUTION: Only slide short distances with maximum 1/3 of normal operating speed. Stop at least1 minute every 20 meters (65 ft.) so that the brakes have time to cool off.
Overheating can cause the brake function to deteriorate.

5. If sliding of the platform is not possible – stay on the platform and call for assistance.

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DANGER !

Falling hazard.

Do not leave the platform – wait for qualified assistance.

Will cause severe personal injury or death.

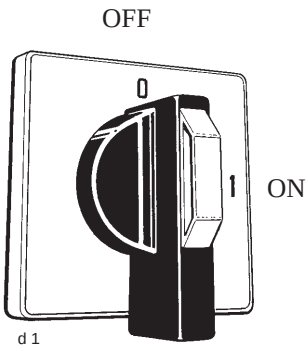
If the machine has been driven against the lower final limit cam

Heavy load and/or poor brake function can cause the platform to activate the final limit switch at the bottom landing. This disconnects power to the drive unit. The platform can be cranked back manually to the normal landing level.

Motor brake should be checked by trained/authorized service personnel, before the platform is put back into service.

Manual cranking

To be carried out by trained service personnel.



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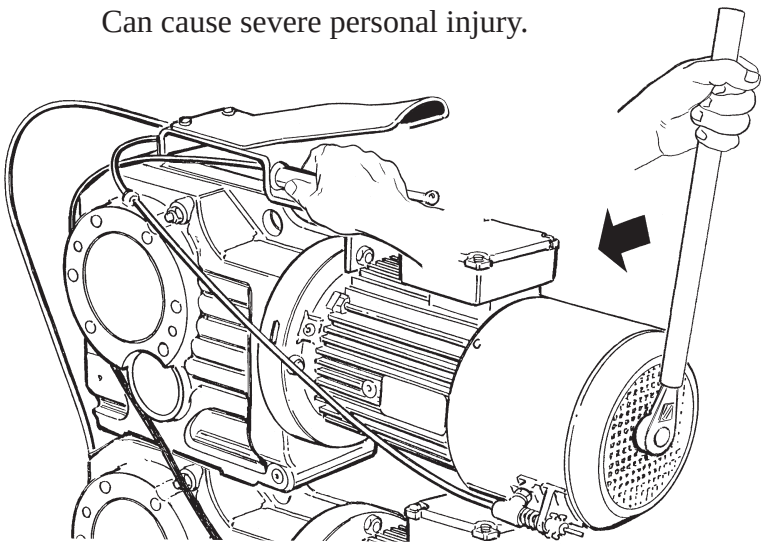
WARNING !

Chrushing hazard.

Always disconnect the power by means of the main switch on the M-panel before working on the machinery.

Can cause severe personal injury.



1. Apply a 24 mm socket and ratchet spanner on the hexagon shaft end inside the upper motor brake.

2. Push the ratchet spanner ***counterclockwise*** and lift both motor brakes at the same time using the brake release handle.

   The platform will then move upwards. Reapply the brake between each turn of the spanner.

   Also raise the platform's other drive unit (if twin configured) in the same manner.
3. Remove the ratchet spanner and socket when the cranking is completed.

"Emergency Electrical Operation"

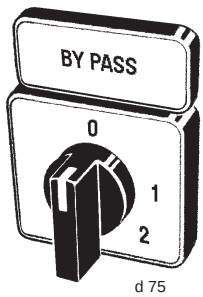
The following instructions are used to drive the platform up ***above the final level*** and is only to be used if the platform has driven onto the final limit cam at the bottom landing because of worn brakes, or if the safety device has activated.

Motor brake should be checked by trained/authorized service personnel, before the platform is put back into service.

– Turn the Bypass switch to position "2" and hold it in this position.
– Pull the Up/Down lever in upwards direction and the platform will proceed in the up direction.

  NOTE: Only drive the platform for short distances using this method.
– The Bypass switch is spring loaded to return automatically to position "1", which will prevent the platform from being operated.
– Turn the Bypass switch to "0" position upon completition of this function

Bypass switch
located on the M-panel



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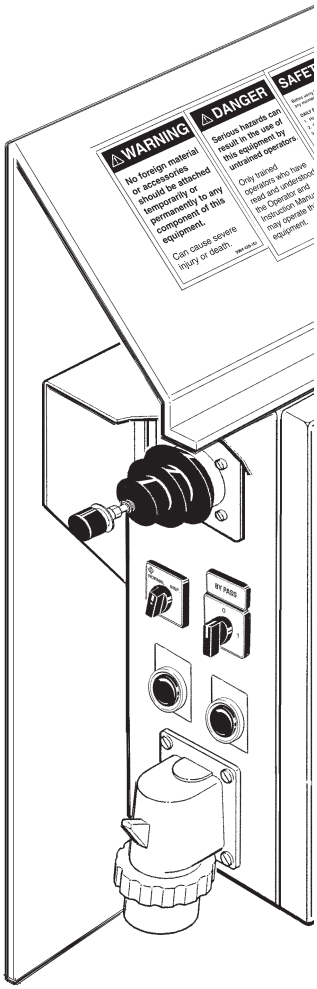

Service and maintenance ..... **E 1**
Adjustments and wear limits ..... **E 4**
Drop test ..... **E 8**
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Safety and instruction signs ..... **E 14**

Service and maintenance

In order to avoid unnecessary breakdowns, those responsible for the service and maintenance of this equipment must regularly ensure that all scheduled maintenance work is carried out at the recommended intervals according to the maintenance program below.

Adjustments and replacement as a result of inspection, must be carried out by trained/authorized service personnel.

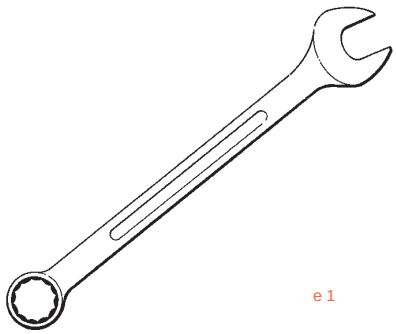
Only ALIMAK Genuine Spare Parts must be used.

WARNING!

Unintended operation.

Always switch OFF lock and tag the main switch when leaving the platform even without having completed the service work.

Can cause severe injury or death.



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Checklists

Checklists, with room for notes on maintenance executed, will be found at the end of this manual. Use them!

Service and maintenance schedule

See heading ’’Technical data & specifications’’ for bolt tightening torques.

Interval		Part	Instructions
40 operating hours or at least every month	1.	Sign plates/ instruction manuals	Check that all signs are legible. Check if actual figures on load sign are correct and that documentation box contains manuals.
	2.	Safety device	Check with the user/users if the safety device has been tripping without cause or if noise can be heard from the device during operation. For further details, see the instructions for checking wear on the safety device under the heading ”Adjustment and wear limits”.
	3.	Gear box	Check the oil level and refill if necessary. Leaking seals must be replaced by trained/authorized personnel.
	4.	Lockings of safety railing	Check that all locks for platform safety railing are intact.
	5.	Locating pins on outriggers	Check that all locating pins are intact.
	6.	Wheels/tires, where applicable	Check tire pressure. Check tires for damage and wheel nuts for tightness.
	7.	Tow bar, where applicable	Check tow bar for damages and that wiring, plug and socket are intact.

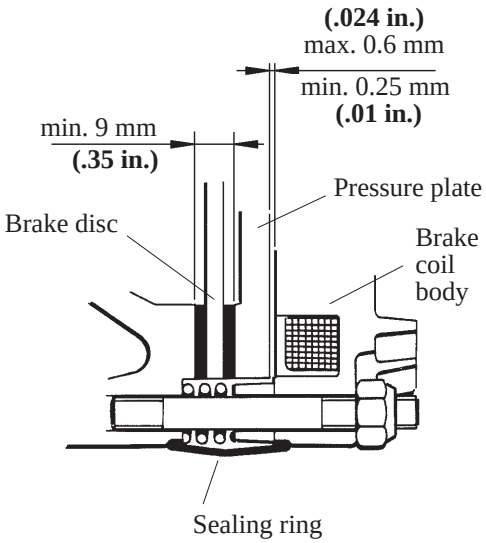
Interval		Part	Instructions
	8.	Steering equipment, where applicable	Check rods for damage.
	9.	Guide rollers	Check that all bolts are properly tightened.
	10.	Attachment of machinery plate	Check that all bolts are properly tightened.
	11.	Electric motor brakes	Check that the platform stops within acceptable limits, specified later in this chapter. See also the special instructions for checking.
	12.	Trailing cable	Check the cable for wear and to ensure that no kinks exist.
	13.	Entrance gate mechanical latch and electrical interlock.	Check the function of the latch and the interlock.
	14.	Platform floor	Clean floor and check condition of floor plates and missing bolts. Replace if necessary.
	15.	Lubricating	See the instructions in the ”Lubricating diagram”. Also check racks for possible damage and attachment when lubricating.
	16.	Optional under platform obstruction protection system, where applicable	Check attachment and wiring. Also make certain that the work platform cannot start with an obstruction between the transmitter and receiver.
120 operating hours or at least 6 times a year	21.	Mast	Check visually that all mast bolts are properly tightened. Also check the bolts for attaching the mast to the pedestal base / mobile chassis.
	22.	Mast ties, where applicable	Check that all bolts in all mast ties are properly tightened. Also check attachment to structure.
	23.	Limit switches and cams, and final limit switch with associated cams	Check attachment and function.
	24.	Gates, railings and protection covers	Check the function and attachment.
	25.	Buffers for platform	Check that the buffers are in position and are in proper condition.
	26.	Signal equipment and lighting	Check the function of the control device, alarm signal, and, where applicable, voice communication system.
	27.	Rack and pinion	Check the wear on the rack and pinion according to the instructions under the heading ”Adjustment and wear limits”.
	28.	Horizontal levelling equipment – for twin mast configuration	Check the attachment and function of the switches and cams. Check the mechanical function by sliding. See heading ”Horizontal levelling equipment”.

Interval		Part	Instructions
	29.	Scaffolding adjacent to platform	Check that the distance from the platform hoistway to landings, scaffolding, balconies, windows or any other location where persons may find themselves, are not less than regulations dictate. Point out any infringements and risks of injuries to the site manager.
	30.	Lubricating	See the instructions in the ”Lubricating diagram”.
400 operating hours or at least 4 times a year	40.	Guide and counter rollers	Check wear and bearing play of the platform guide rollers. Also check that the rollers can move axially. Adjustment and replacement, when required, must be carried out by trained/authorized service personnel.
	41.	Safety device	Test the safety device according to the instructions under the heading ”Drop test”.
	42.	Electric motor	If necessary, clean the cooling flanges of the motor.
	43.	Contactors	Check the condition of the contact points in the contactors.
	44.	Lubricating	See the instructions in the ”Lubricating diagram”.
1000 operating hours or at least once a year	50.	Electric wiring	Check all wires, sealing glands and connections.
	51.	Motor overload protectors	Check that the motor overload protector is set to the rated current on the data plate for the electric motor.
	52.	Deformations/ mechanical damage	Inspect the equipment visually in its entirety for deformation/mechanical damage to mast tubes, diagonal members of the mast sections, gates, protective rails, floors, mast ties, etc. This inspection and any actions which may be necessary after the inspection must be performed by trained/ authorized service personnel.
	53.	Corrosion, damage and wear	Inspect the equipment in its entirety for corrosion and wear on loadbearing and force-absorbing components with the aid of an ultrasonic thickness measuring instrument. This inspection and any actions which may need to be taken after the inspection must be performed by trained/authorized service personnel. A method for internal corrosion protection of the mast tubes is available. Please contact your ALIMAK representative.
	54.	Mast	Check that all mast bolts are properly tightened. Also check the bolts for attaching the mast to the chassis.
	55.	Lubricating	See the instructions in the ”Lubricating diagram”.
Annually	60.	Complete platform	Have the complete equipment checked by a qualified technician.
Every 4th year or according to sign on the safety device	61.	Safety device	Replace the complete safety device. Contact your Alimak representative.

Adjustment and wear limits

Platform stopping positions

If the distance between actual stopping positions empty/fully loaded platform exceeds 50 mm (**2 in.**), the brakes must be checked by trained/ authorized service personnel.



Brake inspection
To be carried out by trained service personnel.

WARNING!

Unintended operation

Bring the platform down to rest on the buffer springs. Switch off, lock and tag the main switch before inspection can take place.

Can cause severe bodily injury or death.

Inspecting brake condition

Check airgap between pressure plate and brake coil body with the aid of a feeler gauge.

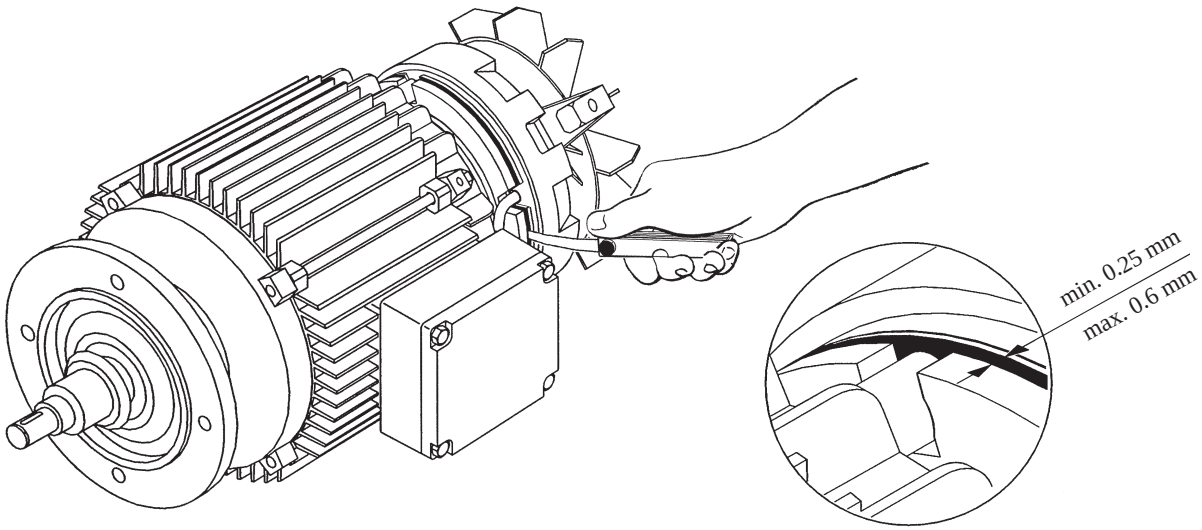
1. Tighten hexagon nuts on stud bolts until minimum permissible airgap is obtained, between brake coil body and pressure plate.
2. Measure rotating brake disc. Replace disc when it is worn down to 9 mm (**.35 in.**).

At the same time remember to readjust the horizontal levelling equipment for the platform in twin mast configuration.

If the brake cannot be electrically released, check:

– that the rectifier is in order and energized.
– that the brake contactor is in order.
– the voltage to the magnet coil (nom. 195V DC).
– the resistance of the coil (nom. approximately 121 Ohm).

Replace electromagnet housing with coil if the coil is detective.



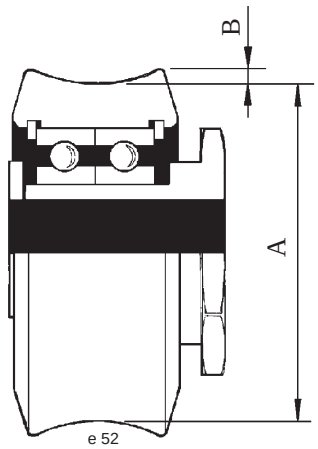
Guide roller

Wear limits

Measure with sliding caliper.

Dimensions	New roller (mm)	Worn-out roller (mm)
A	Ø 74 **(Ø 2.91 in.)**	min. Ø 68 **(min. Ø 2.68 in.)**
B		min. 2 **(min. .08 in.)**

Note that the ”wear” on the roller face must be equal – all around.



Adjustment of guide rollers

CAUTION! Rollers must only be adjusted when there is no load on the platform.

The following adjustments are carried out by freeing the attaching bolt/nut of the roller and rotating the eccentric shaft with the tool provided until the correct setting is attained. Then retighten the bolt.

Support rollers

1. Adjust the upper support rollers so that the platform structure is parallel to the front edge of the mast frame.
2. Adjust the ***lower*** support rollers so that the frame is parallel to the mast tubes in the vertical plane.

Side rollers

CAUTION! The side rollers must be adjusted when they are level with a horizontal frame of the mast and always adjusted in pairs.

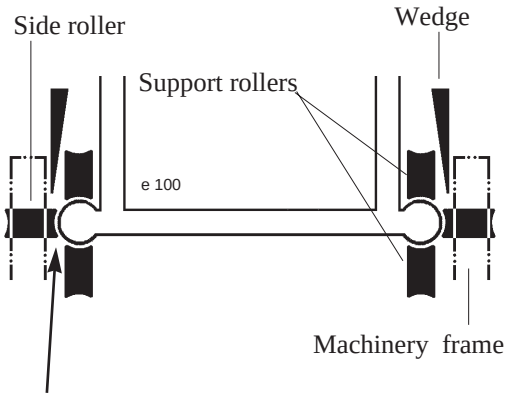
3. Loosen the side guide rollers and center the platform frame between the mast tubes using wedges as shown.
4. **Single roller:**

   – Adjust both side rollers with air gap 0.7 mm **(.027”)** and lock them in this position.

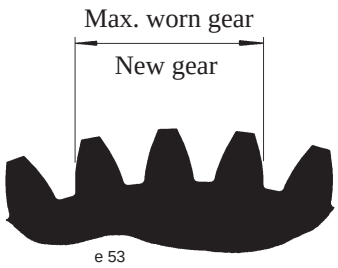
   With a roller assembly:

   – Push bottom roller of the assembly against the mast tubes and adjust the air gap between the top roller and mast tube to 0.7 mm **(.027”)** and lock the assembly in this position.

Note! The side rollers must NOT be adjusted closer than 0.7 mm (.027”). Only occasional contact between roller and mast tube is allowed during operation.



Air gap 0.7 mm **(.027”)** must be done on both side rollers **AT THE SAME TIME** and be adjusted with the side rollers in level with one horizontal mast frame.



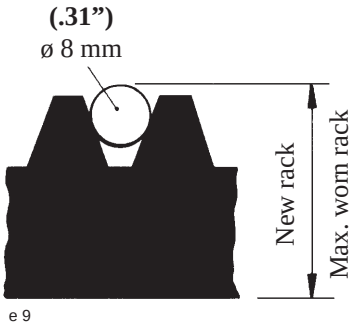
Pinion

Check the wear with the aid of sliding caliper.

New gear = 38.5 mm **(1.51 in.)**

Max worn gear = 37.1 mm **(1.46 in.)**

The counter roller for the pinion must be changed when the pinion is replaced.



Rack

Measure with a dia. 8 mm **(.31 in.)** gauge rod and sliding caliper.

New rack = 39.9 mm **(1.57 in.)**

Max worn rack = 38.2 mm **(1.50 in.)**

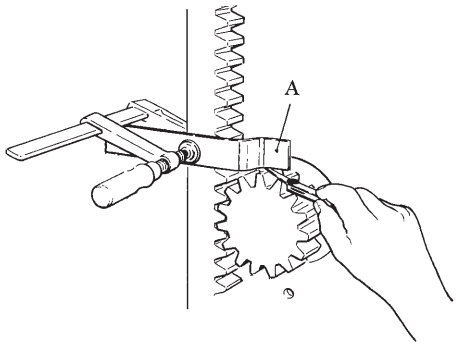
Mast tubes

Checking of wear and corrosion of the mast sections is carried out by means of an Alimak ultrasonic tester, P/N.3001 991-301. The bottom mast section is throughly checked.

New mast tubes (t) = 4.2 mm **(.165 in.)** nom.

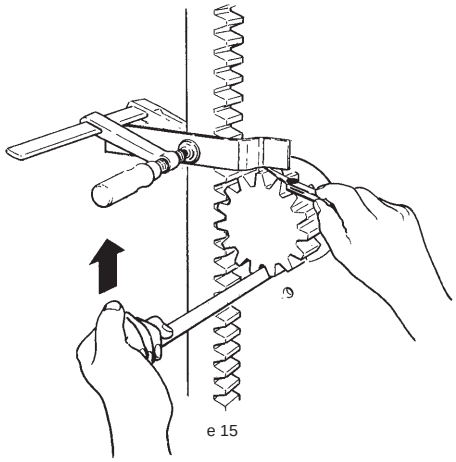
Max. worn mast tubes (t) = 3.6 mm **(.142 in.)** – approximately 15% reduction of wall thickness.

Measuring the radial play of the rotating shaft on the safety device



CAUTION! Do not lubricate the safety device before test.

1. Clamp a support (A) on the rack with the aid of a C-clamp – approximately 1 mm (**.039 in.**) above the safety device pinion.
2. Measure the play with a feeler gauge.



3. Lift the pinion with the aid of the cranking lever from the tool kit or some other suitable tool and measure the play again.

   Note that the pinion may not be turned but must remain in precisely the same position during both measurements.

4. The difference between the two measured values is the radial play in the safety device shaft.
5. If the radial play is greater than 0.6 mm (**.024 in.**), the safety device must be replaced.

Drop test

To be carried out by trained service personnel.

A drop test with full load shall be carried out for each new installation and then at least once every 3 months – or in accordance with local safety regulations.

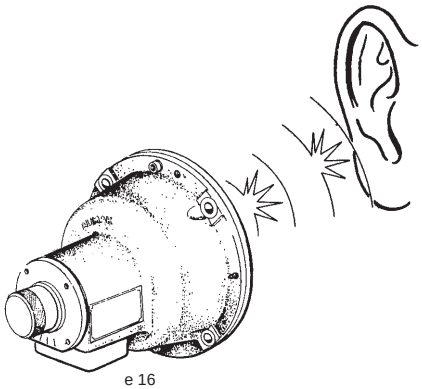
DANGER!

Brake malfunction hazard

No one is allowed on the platform during a drop test.

Will cause severe bodily injury or death.

If the safety device begins to trip or if noise occurs in the safety device during operation, the platform must be taken out of service immediately and the local ALIMAK representative notified for action.



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CAUTION! In twin configuration both drive units must be tested at the same time, mechanically connected.

1. Testrun the platform in upwards and downwards direction to ensure that the brakes have sufficient brake torque.
2. Connect the drop test cable to the terminal block marked ”Drop test” inside the platform electric M-panel.
3. Attach the cable to the railing adjacent to the electric panel and lower the pushbutton box outside the railing to the ground. At the same time, check that the cable is suspended in such a way that it cannot be crushed or be obstructed when the drop test is carried out.
4. Load the platform with full load. Switch on the main ON/OFF switch and run the platform from the ground level up approximately 1.5 meters **(5 ft.)** by means of the button on the pushbutton box on the testing cable.

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Drop test must be carried out with full load.

5. Press the button on the drop test pushbutton box marked with an arrow symbol and maintain it in the depressed position. This releases the motor brakes and the platform will drop until it reaches the tripping speed and the safety device is actuated.

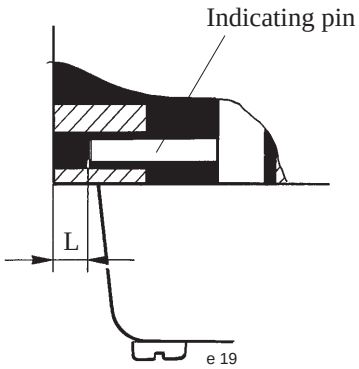
   Release the pushbutton immediately if the safety device does not function and stop the platform – at least 0.5 meters (approximately 2 ft.) above lower normal landing level. The brake(s) is applied when the pushbutton is released.

6. Run the platform upwards 0.2 meters **(8 in.)** to release the mechanism of the safety device. Slide the platform to the normal lower landing level with the drop test equipment and the pushbutton with the arrow symbol.
7. Remove the test cable.
8. Check that the microswitch in the safety device functions by test running the platform downwards with ordinary operating equipment.
9. Reset the safety device in accordance with instructions to be found on next page:

Calculating the stopping distance before resetting

The safety device stopping distance can be measured between the end face of the safety device and the end of the indicating pin – measure ”L”, see figure.

Multiply measure ”L” with factor 118 for safety device type GF.



CAUTION! The safety device must be exchanged if measure ”L” exceeds the value stated on the safety’s sign.

Resetting the safety device

If the safety device trips during normal operation, a careful check must be made of the motor brake(s), transmission, pinion, rack and all guide and counter rollers by trained /authorized service personnel, before the safety device can be reset. The cause of the tripping must be determined and rectified.

The safety device may be reset after a drop test, without having to carry out the checks listed above.

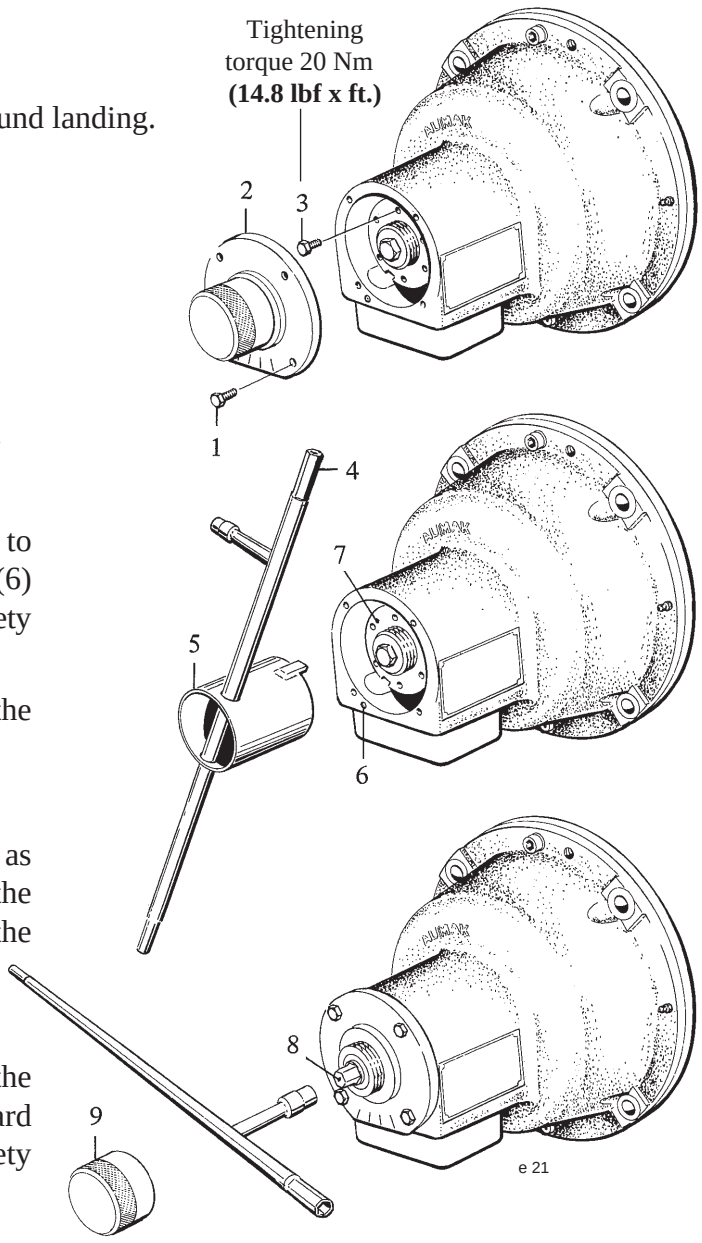
Exchange intervals, see sign on safety device!

WARNING!

Falling hazard

Never reset the safety device above ground landing.

Can cause severe injury or death.



Resetting
To be carried out by trained service personnel.

1. Switch off the main switch.
2. Unscrew the bolts (1) and remove the cover (2).
3. Unscrew the bolts (3).
4. Use the sleeve (5) and the cranking lever (4) to back off the nut (7) until the end of the pin (6) is on a level with the end surface of the safety device.
5. Install the bolts (3) and the cover (2) with the bolts (1).
6. Remove the protective cover (9).
7. Tighten the bolt (8) by hand as far as possible and then a further 30° with aid of the sleeve and the cranking lever (4) – in the direction indicated by the arrow on the cover.
8. Reinstall the protective cover (9).
9. Switch on the main switch and run the platform up approximately 20 cm (**8 in**). upward to reset the centrifugal weight of the safety device in its neutral position.
10. Make a test run.

From a safety point of view the safety device must never be dismantled more than is necessary to reset it as described above. For this reason the safety device is sealed.

Lubrication diagram

INTERVAL	ITEM	LUBRICATING POINT	LUBRICANT VOLUME	INSTRUCTIONS
40 operating hours or at least once a month	1	Gear box		Check oil level.
	2	Rack	Alilube Part No 3001 396-201	Lubricate during lowering and take platform out of operation for 2-3 hours to permit the spray to congeal.
	3	Safety device	Grease	Grease nipple.
	4	Pedestal base mechanical jacks	Lube oil	Lubricate threads.
	5	Outrigger mechanical jacks	Grease	Grease nipples.
	6	Chassis steering link rods	Grease	Grease nipples.
	7	Chassis travel machinery transmission	Grease	Grease nipples and slide surfaces.
	8	Gate lock, mechanical interlock and Teleflex cable – where applicable	Lube oil	Lubricate bearings and slide surfaces.
	9	Mech. horizontal levelling equipment and Teleflex cable	Lube oil	Lubricate bearings and slide surfaces.
1000 operating hours or at least once a year	20	Helical gear	Alioil HD 3.7 lit. Part No 9040 996-000	Change oil.

The lubricating oil grades indicated above have been used when the equipment is delivered from the factory. Only oil recommended by ALIMAK shall be used. If for some reason this is not possible, please contact ALIMAK or ALIMAK representative for advice.

If changing to another oil, the gear box and air filter must first be carefully cleaned.

WARNING!

Lubricant harmful in contact with skin and lungs.

Always use protective gloves and dust mask.

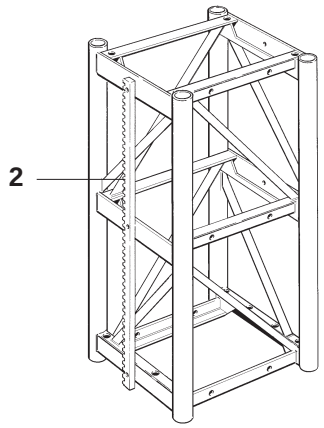
Possible risks of irreversible effects.
See applicable MSDS located in document box located on the platform.

WARNING!

Falling hazard.

Always use a fall arresting device if there is a need to climb above the safety railing to reach the rack or items to grease or inspect.

Can cause severe injury or death.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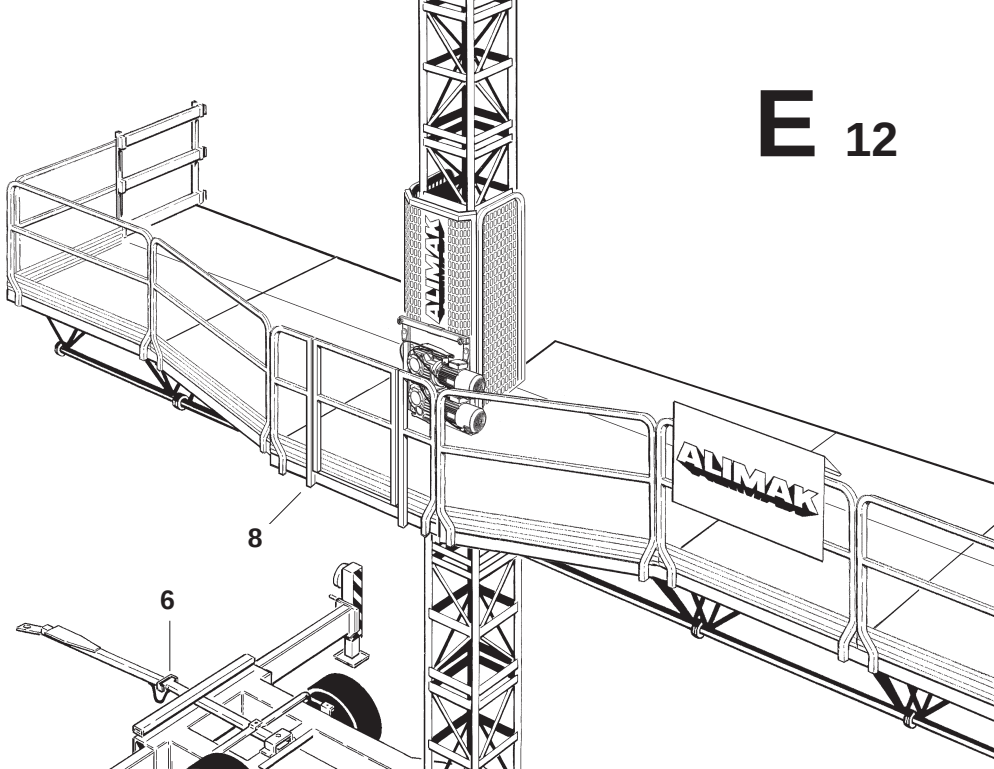
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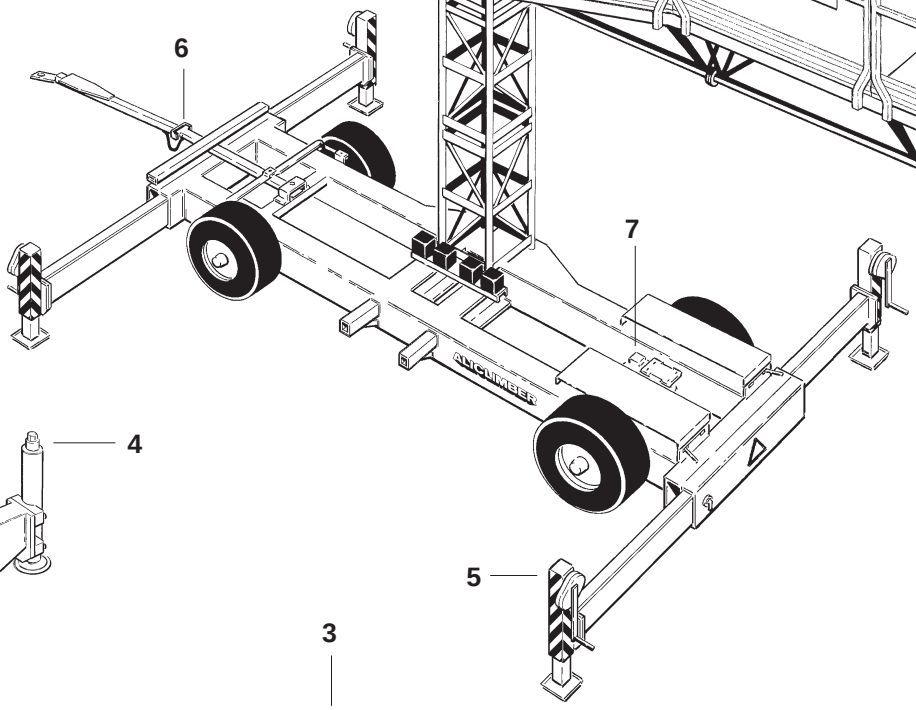
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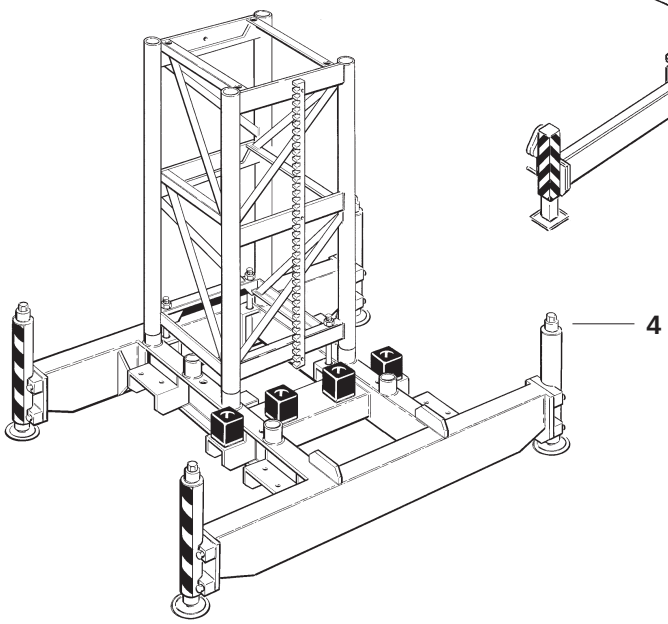
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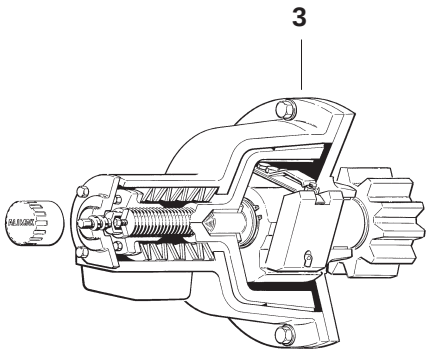
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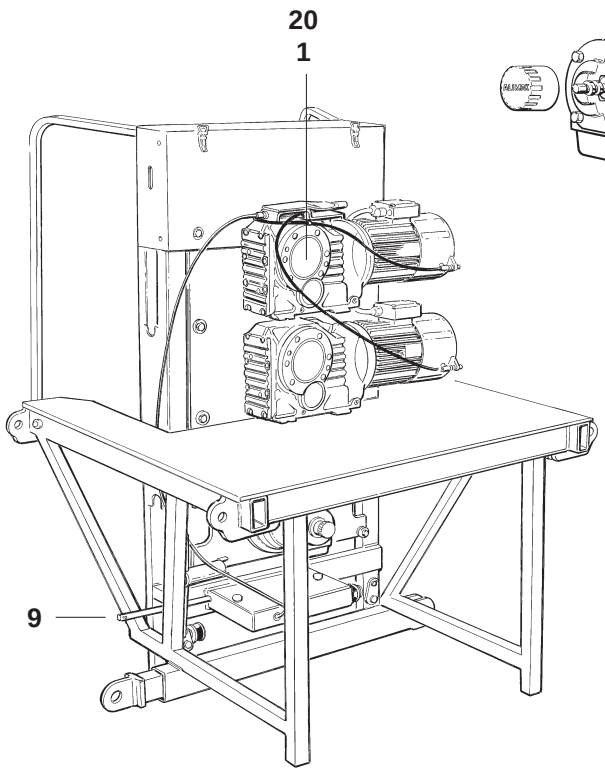
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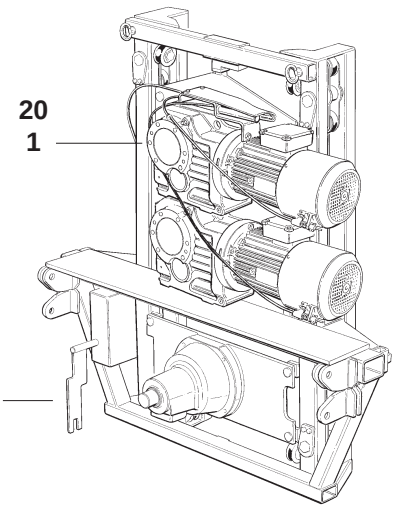
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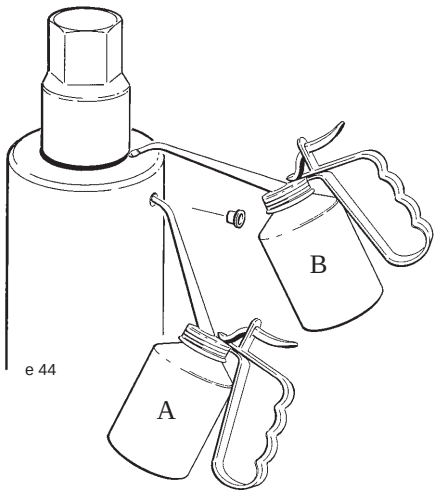
9

Greasing the manual screw jacks – applicable for pedestal base only

1. Remove the plastic plug on the jack case.
2. Insert the tip of the lubricating can into the hole as shown (A) and generously lubricate both the screw threads and axial bearing.
3. Extend jack piston until there is a play between the jack case and the spanner grip.
4. Fill oil in this space as shown (B).
5. Reinstall the plastic plug and reset the jack to retracted position.

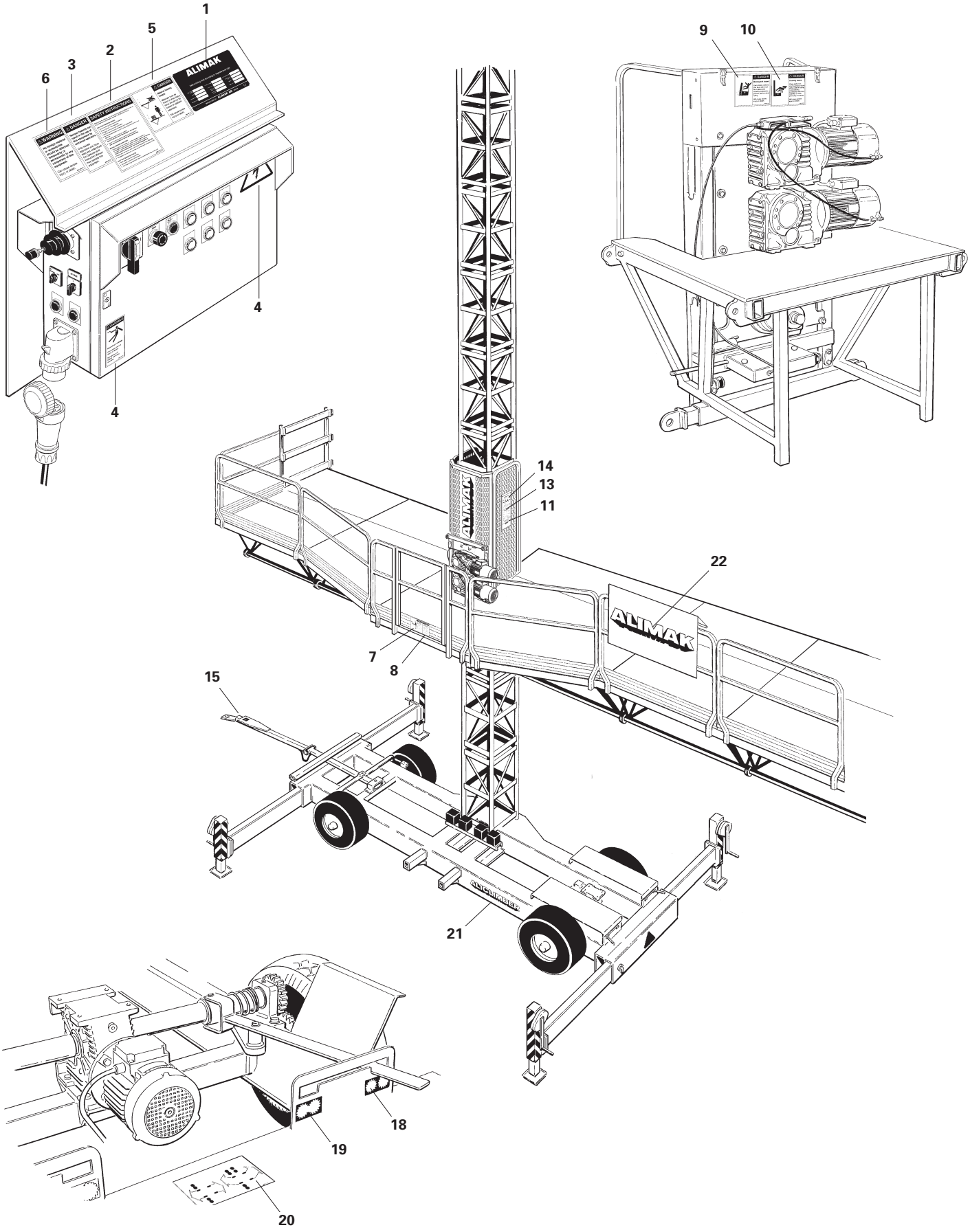


e 44

Safety, information and product signs

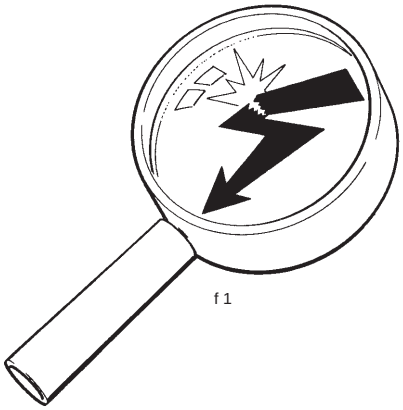
Item	Description	Designation	Part No.
1	Identification /Type sign	Aluminum	9032 855-101
2	Safety instructions:	Instructions for use	9064 425-101
3	Danger sign:	The use of this equipment by untrained personnel can cause serious hazards.	9064 426-101
4	Warning sign	Hazardous voltage EU	9032 789-000
	Warning sign	Hazardous voltage US	9028 518-101
5	Danger sign	Platform extension collapse hazard	9064 427-101
6	Warning sign	No foreign material ...	9064 428-101
7	Danger sign	Tipping hazard when using pedestal base	9064 429-101
8	Danger sign	Tipping hazard	9064 430-101
9	Danger sign	Missing bolt hazard	9064 431-101
10	Danger sign	Crushing hazard	9064 432-101
11	Danger sign	Platform collapse hazard	9064 433-101
12			
13	Load sign, platform	Plastic	9064 434-000
14	Sign base arrangement	Plastic	9064 435-000
15	Instruction sign	Notice – before towing...	9032 862-101
16			
17			
18	IInstruction sign	Pictorial disengaged	9032 867-100
19	Instruction sign	Pictorial engaged	9032 867-200
20	IInstruction sign	Pictorial, driving around curves	9040 718-100
21	Aliclimber sticker		
22	Alimak sticker		

Location of safety, information and product signs



Electrical troubleshooting . . . . . F 1
Example F3
Circuit diagram . . . . . .

Electrical troubleshooting


f 1

All forms of troubleshooting require adapting the procedure to the function and structure of the equipment and to other conditions which may be local in nature. For example, the erection site, maintenance, previous operational problems, etc.

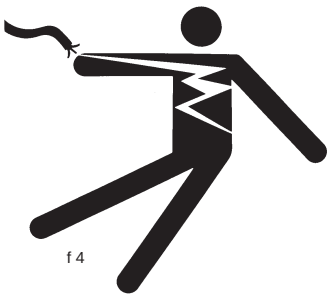
The main principles of all forms of troubleshooting in electric systems are presented below. Troubleshooting is carried out with the aid of a test lamp or voltmeter. A voltmeter is recommended, preferably a universal instrument, for rapid and reliable trouble-shooting.

WARNING!

Hazardous voltage.

Only authorized electricians or authorized service personnel can carry out work on electrical equipment.

Can cause severe injury or death.


f 4

Procedures for troubleshooting

1. Use the circuit diagram. This diagram is located in a box on the platform. The diagram indicates how the electrical equipment should function, how it is built and connected.
2. Begin by checking that power is supplied on all three phases of the incoming main voltage.
3. Check that the outgoing power cable receives power when the main switch is switched on.
4. Now begin troubleshooting on the platform by checking that the power reaches the platform.
5. Check that the stop circuit is not open, in other words that thermal relays and phase failure relays have not been actuated and that the limit switches for the safety device, final limit switch, and other limit switches have closed contacts. Make sure that the stop button is not in the depressed position. When the stop circuit is closed, the main contactor will be in the ”On” position.
6. Check with a voltmeter/test lamp that the limit switches for ”Up” and ”Down” function properly.
7. Connect the voltmeter/test lamp between the zero terminal and the terminal as indicated on the circuit diagram, and check that power is supplied where it should be supplied. Go through each terminal, one by one, and work methodically so that the circuits which function correctly can be eliminated and the fault can be localized.

8. Check in the electrical M-panel to ensure that power occurs on all three phases of the incoming cable.
9. Check that the “Up” and “Down” pulses from the pushbuttons and control devices reaches the electric cabinet on the platform in the intended manner.
10. Make a trial run and check that the coil on the relevant contactor (Up, Down) receives power and that it is actuated. Check that the brake contactor is actuated and that the brake coil is energized so that the brake releases.
11. If the fault does not occur in the platform operating system but in its lighting or signal system, carry out fault-tracing in a manner similar to that described above. Check the circuits methodically one by one until you have narrowed down the fault and localized it.

Experience shows that certain faults have symptoms which, may indicate the cause and the probable location of the fault:

Example:

Symptom	**Probable cause**	**Probable fault location**
a) Control fuses blow immediately.	Short-circuit, equipment grounded.	Damaged power cable, damaged pushbutton, limit switchs etc. externally located.
b) Fuse blows after a short period of time.	Equipment partially grounded, overload.	Dampness or water in junction box, limit switch etc. due to damaged electrical components. Improperly connected equipment.
c) Platform stops or cannot be started.	Limit switch in stop circuit has tripped/been actuated, blown fuse.	Stop pushbutton depressed, thermal relay actuated due to overload or careless operation, *switch in safety device actuated, power failure from supply. See also a) and b) above.
d) Platform stops and can be restarted, but then stops again.	Switch actuated in the stop circuit.	Switch in stop circuit improperly positioned.

*The switch is set at the factory and may not be adjusted.

ALIMAK STD. DESIGNATION SYSTEM

\+ SIGN MEANS POSITION
\- SIGN MEANS ITEM

ALIMAK ITEM DESIGNATION SYSTEM

LEGEND

-A = BOXES AND PANELS ETC..
-B = PULS TRANSMITTERS ETC..
-C = CAPACITATORS
-D = PLC-SYSTEMS AND COMPUTORS
-E = LIGHTS AND FANS
-F = FUSES AND SIMULAR
-G = BATTERIES AND CHARGERS
-H = BUZZERS AND SIGNAL LAMPS
-K = RELAYS AND SIMULAR
-L = MAGNETS AND INDUCTORS
-M = MOTORS
-N = ANALOG COMPONENTS
-P = METERS
-Q = POWER SWITCHES
-R = RESISTORS
-S = SWITCHES AND SIMULAR
-T = TRANSFORMERS
-U = VFC-UNITS, SOFTSTARTERS AND SIMULAR
-V = DIODS TRANSISTORS ETC..
-W = CABLES AND WIRE
-X = TERMINALS AND OUTLETS
-Y = BRAKES AND ACTUATORS
-Z = FILTERS LIKE RC-UNITS AND SIMULAR

ALIMAK POSITION DESIGNATION SYSTEM

LEGEND

+C+M = MAIN ELECTRICAL PANEL ON THE PLATFORM
+C = COMPONENTS ON THE PLATFORM
+C1 = COMPONENTS ON DRIVE UNIT 1 (LEFT)
+C2 = COMPONENTS ON DRIVE UNIT 2 (RIGHT)
+C+D1 = DRIVE UNIT 1 (LEFT)
+C+D2 = DRIVE UNIT 2 (RIGHT)
+H = AM CONTROL BOX AT BASE
+H+B = AM CONTROL PANEL
+H+D = CATWALK B-PANEL
+L = LANDING EQUIPMENT
+L+P = LANDING CONTROL BOX
ETC..

EXAMPLE

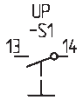
+C1-S1 = SWITCH 1 ON DRIVE UNIT 1
+C+M-K1 = CONTACTOR 1 IN THE MAIN PANEL ON THE PLATFORM
+C1-M1 = MOTOR 1 ON DRIVE UNIT 1

THE POSITION DESIGNATION IN THE DRAWING HEADER APPLIES TO THE WHOLE DRAWING IF NOT OTHERWISE STATED →

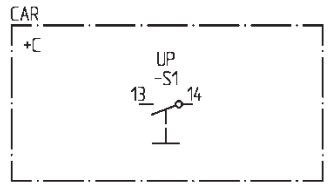
PLATFORM
SAFETY CIRCUIT
+C+M
CIRCUIT DIAGRAM

EXAMPLE

DESIGNATION FOR THIS SWITCH IS +C+M-S1
WHICH MEANS SWITCH 1 IN THE MAIN PANEL ON THE PLATFORM



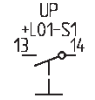
IF THE SWITCH IS DRAWN IN A BOX LIKE THIS IT IS THE POSITION DESIGNATION IN THE BOX THAT APPLY FOR EVERY THING INSIDE THAT BOX UNLESS OTHER WISE STATED →



EXAMPLE

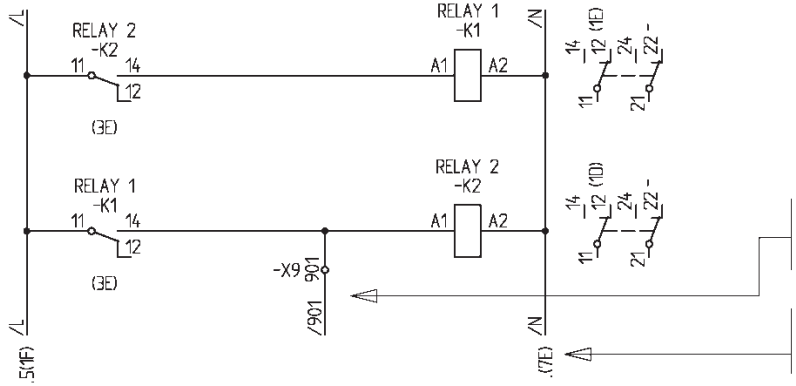
DESIGNATION FOR THIS SWITCH IS +C-S1
WHICH MEANS SWITCH 1 ON THE PLATFORM

THE WHOLE DESIGNATION CAN ALSO BE WRITTEN ON THE SYMBOL AND THEN IT IS THAT DESIGNATION WHICH WILL APPLY FOR THAT COMPONENT →



EXAMPLE

DESIGNATION FOR THIS SWITCH IS +L01-S1
WHICH MEANS SWITCH 1 ON LANDING 01



TERMINALGROUP -X9 IS CONNECTION POINTS FOR OPTIONAL EQUIPMENT. IF THERE IS NO CROSS-REFERENCE PRESENT THEN THE TERMINAL IS NOT CONNECTED.

EXAMPLE
.(7E) = CROSS-REFERENCE TO PRESENT PAGE ,COORD. 7E
.5(2F) = CROSS-REFERENCE TO PAGE 5, COORD 2F

ALIMAK COLOUR CODE SYSTEM

LEGEND

BK = BLACK
BN = BROWN
BU = BLUE
GN = GREEN
GY = GREY
OG = ORANGE
PK = PINK
RD = RED
TQ = TURQUOISE
VT = VIOLET
WH = WHITE
YE = YELLOW
GD = GOLD
SR = SILVER

GNYE = GREEN & YELLOW
YG = SHORTEND VERSION OF GREEN & YELLOW (GNYE)

Rev.	Modification	By	Date

ALIMAK

PLATFORM
EXPLANATIONS APF, AT & AM
ELECTRICAL
DESIGNATION SYSTEM

Designed	MAST	Drawn	MAST	Date	2001-03-26
Scale	-	Approved	JE	Date	2001-03-26
Source	S -	Id.no.			9070565 / EK___001
Pages	24	Next page	2	Page	1

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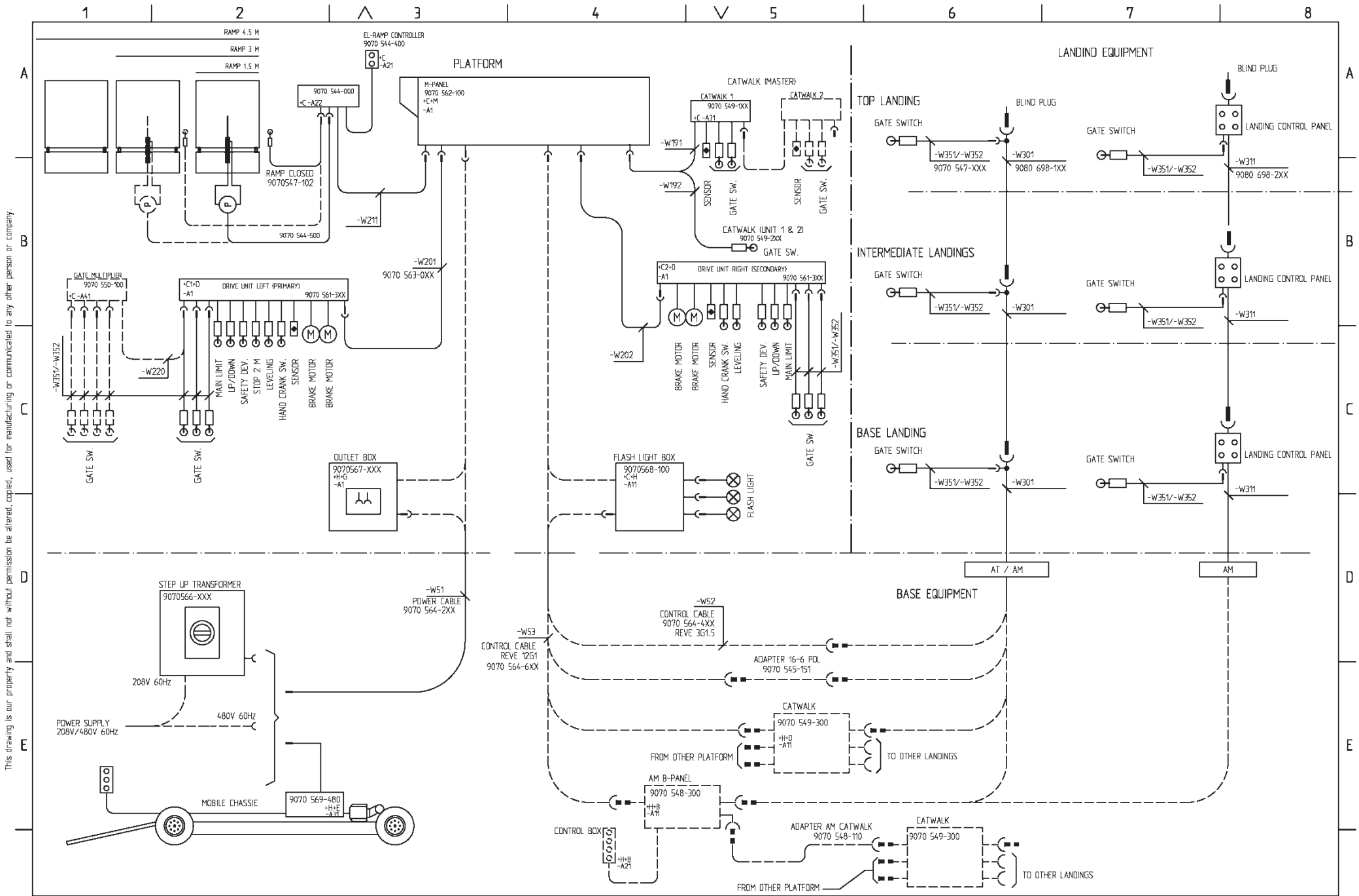

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Rev.	Modification	By	Date

ALIMAK

PLATFORM
APF,AT & AM

PRINCIPAL ARRANGEMENT

Designed	MAST	Drawn	MAST
Scale	–	Approved	JE
Source		Id.no.	9070565 / EK___002
Pages	24	Next page	3

Date 2001-03-26
Date 2001-03-26
Page 2

Before assenbly ..... **G 1**
Pedestal arreangements ..... **G 2**
Connection to power supply ..... **G 4**
Ground pressure ..... **G 5**
Erection of single mast platform with pedestal base .... **G 6**
Erection of twin masted platform ..... **G 8**
Electrical/mechanical horisontal levelling equipment .. **G 9**

Before assembly

Delivery inspection

Check the delivery against shipping lists and look for transport damages. Should there be any damage, report same to the responsible transport insurance company within 7 days from the date of arrival of the goods.

Other claims should be made to ALIMAK representative within the same period.

Permission

Make sure the chosen erection site meets the requirements set by safety and regulatory authorities and that where required, authorization to install and use has been granted.

Also check that the erection site is suitable with regard to local wind conditions – if structures nearby create tunnel effects.

Erection site

Prepare installation so that electric power, light, lifting equipment and tools are available, and that roads and the site can receive the platform and the platform transport.
The A-System Platforms **MUST NEVER** be installed on mud, snow, ice, or on unsuitable footings.

Where possible, preassemble of mast ties. Suitable places for attaching the ties are balconies or other concrete or steel structural members. Remember that these structures must be strong enough to withstand the force of the ties and it is the responsibility of the user / owner to ensure that in fact is xxxx

Height of guards rails for platform / extension facing the structure must be according to local regulations.

Note that the distance between the work platform and another machine **MUST NOT** be less 0.5 meter **(1 ft. 8 in.)**

Safety Equipment and Protective Clothing

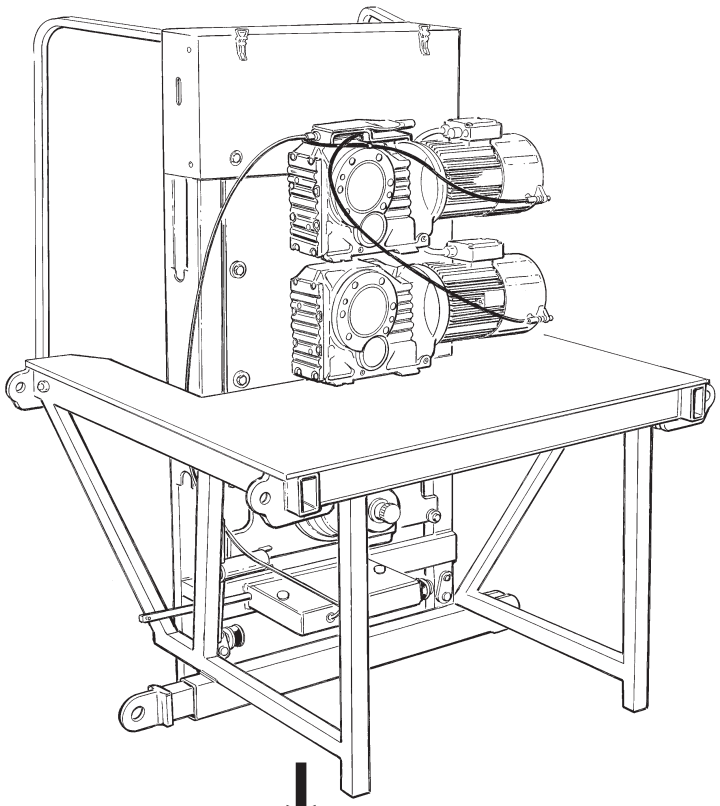
Regulated safety equipment and clothing such as hard hat, safety shoes, fall arresting devices, etc. shall be used.

Electrical power supply

Prepare for the power supply from its source. Make sure that the power supply cable is properly sized so that voltage drop is minimized.

Maximum permitted voltage drop, measured at motor, at 480V = 24V, which is equal to 5%.

Minimum required conductor size and fuse specifications are indicated in the table below.



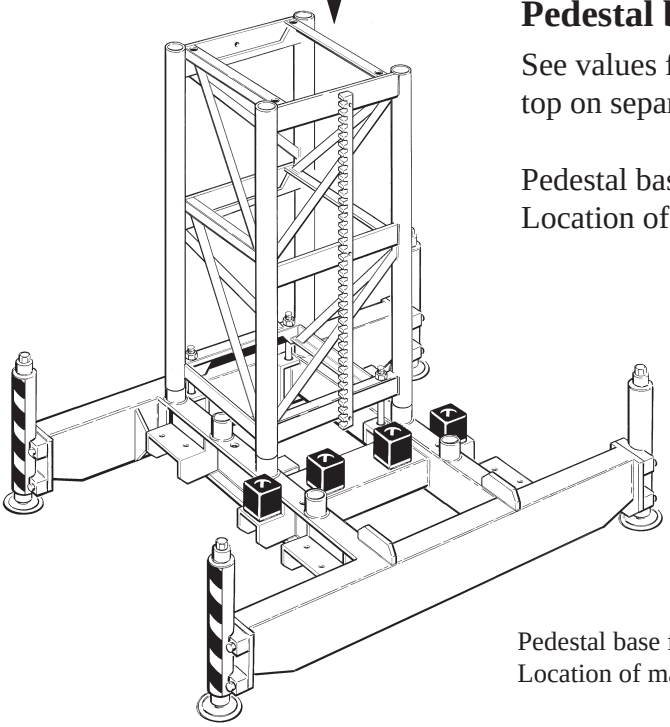
No. of motors on the same power outlet	Conductor size sq. mm	Fuse* Amp. delay action
2(2 x 4 kW)	4 x 10.0 **(AWG No. 6)**	63

* In order to avoid single phasing, if main fuse should blow, we recommend use of three- phase circuit breaker.

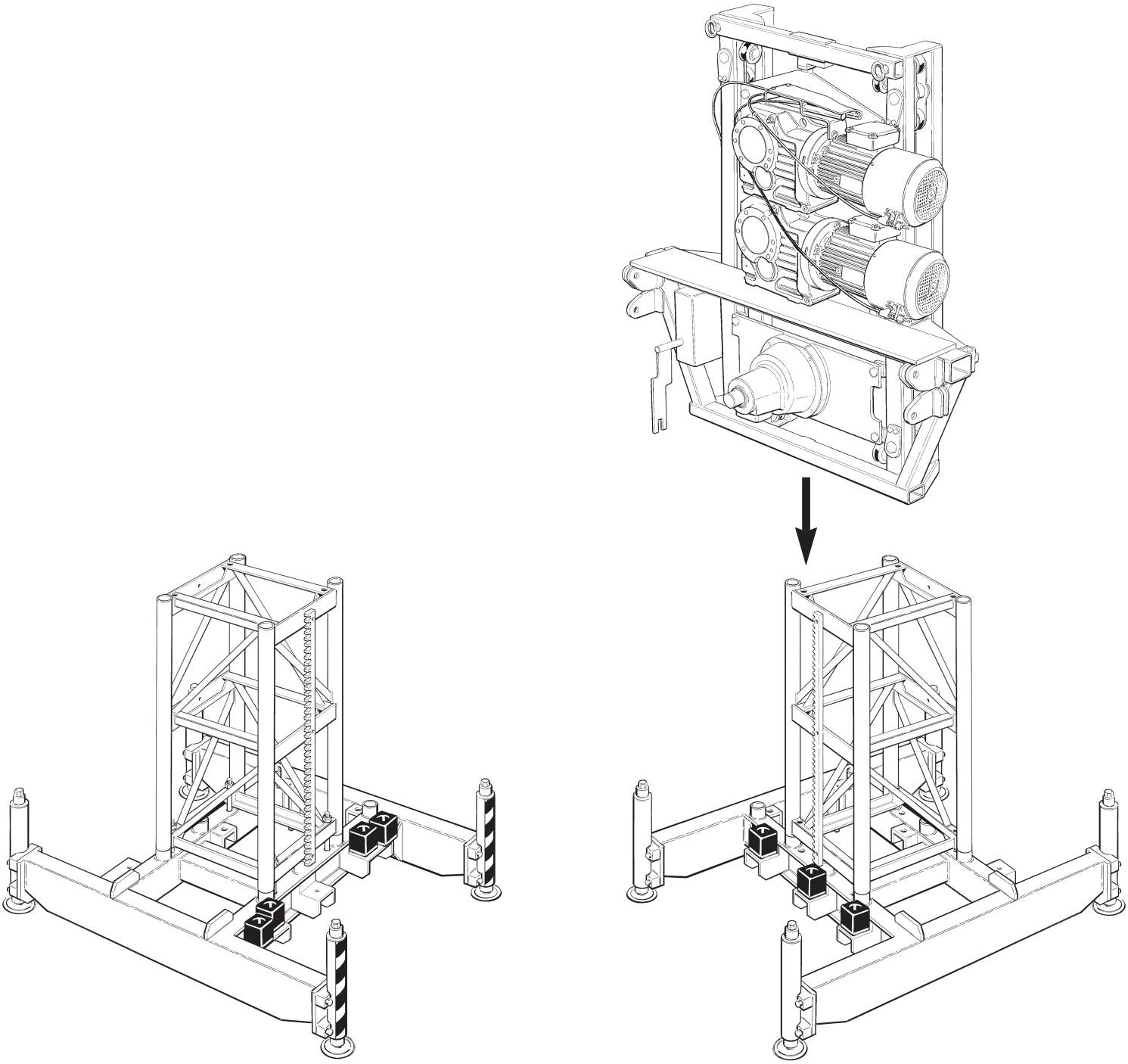
Pedestal base arrangements

See values for free-standing, tie distances and free untied mast top on separate data sheet for respective machine.

Pedestal base for work platform with drive unit type A
Location of mast section and rubber buffers.



Pedestal base for work platform with drive unit type A.
Location of mast section and buffers.



Pedestal base for work platform with drive unit type B.
Location of mast section and buffers.

Connection to power supply

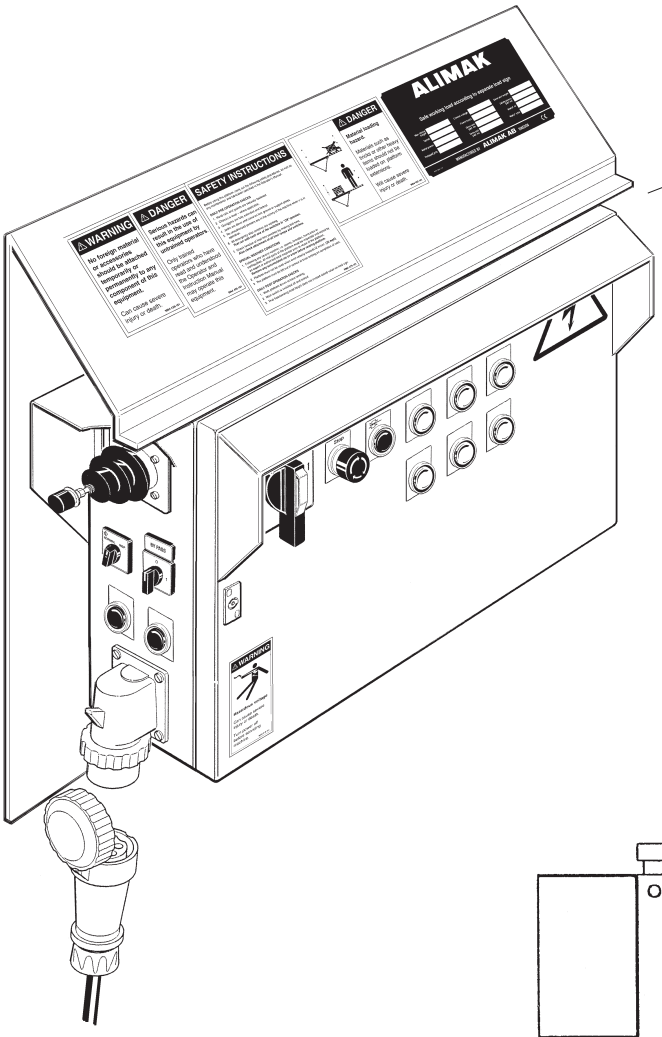
Power input connection to the work platform electrical M-panel should be made with a minimum of 4 x 10.0 mm² **(approx. AWG No. 6)** cable.

Turn on the main switch and check the phase failure indication light on the outside of the panel that the machine has been connected properly with correct phase sequence.
If the phase indication light is illuminated, change to the correct phase sequence by means of the phase inverter inside the panel.

Locate cables for platform electrical components in suitable hollow profiles located underneath the platform.

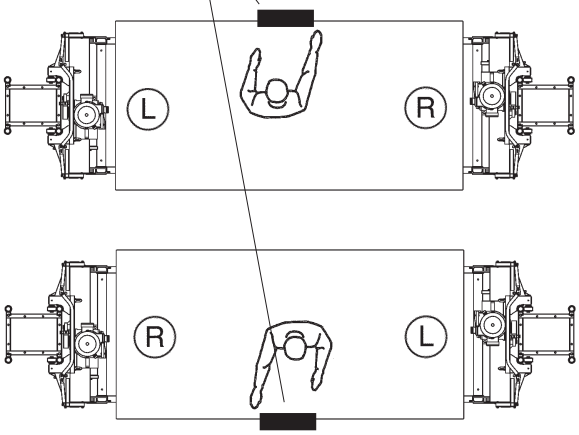
L = ”Master” equipment in a twin mast installation.

R = ”Slave” equipment in a twin mast installation.

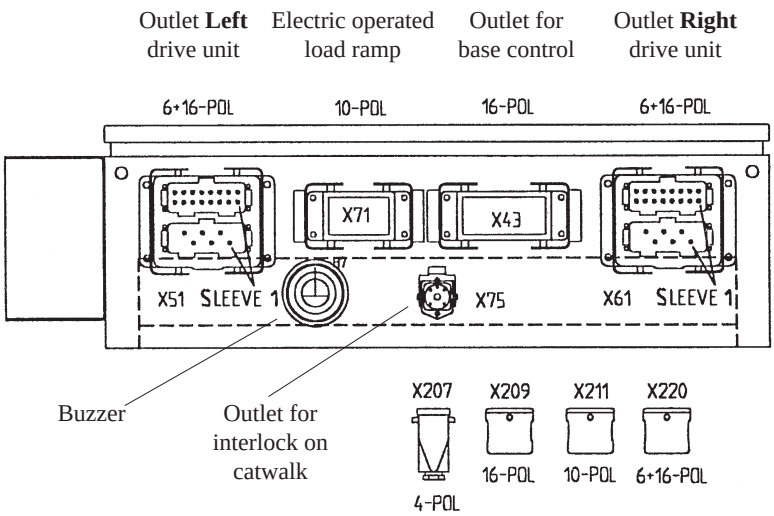


Power supply

Platform electrical M-panel



Underside of platform electrical M-panel

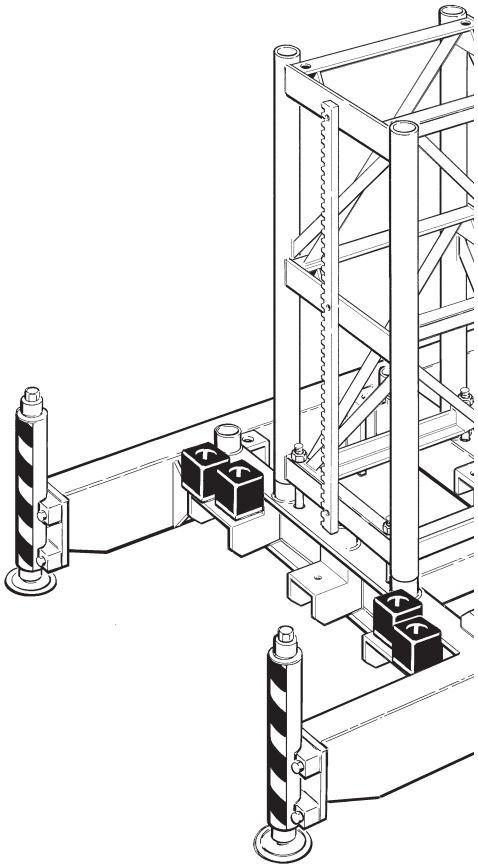


Jumper plugs

Ground Pressure

Maximum ground force P with 100 m **(330 ft.)** mast for:

pedestal base: 48 kN **(10 800 lbf.).**
mobile chassis: 64 kN **(14 400 lbf.).**

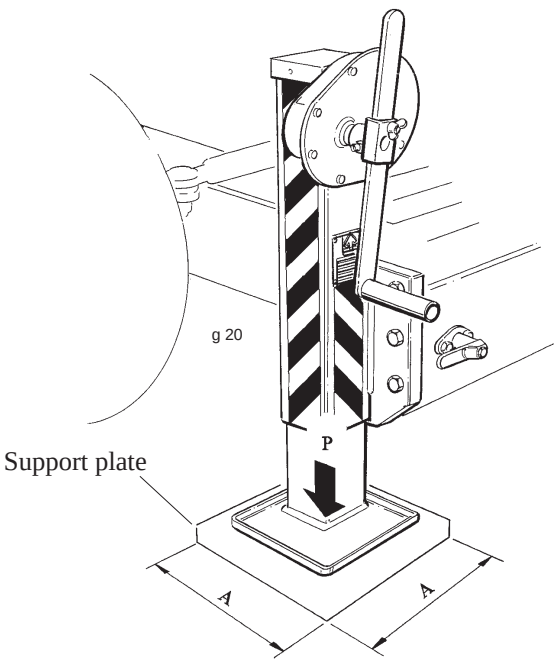


Minimum required soil bearing pressure.

Class of material	Allowable foundation pressure Pf
1. Massive crystalline bedrock	192 kPA **(4 000 psf.)**
2. Sedimentary and foliated rock	96 kPA (**2 000 psf.)**
3. Sandy gravel and/or gravel (GW and GP)	96 kPA **(2 000 psf.)**
4. Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC. GM and GC).	72 kPA **(1 500 psf.)**
5. Clay, sandy clay, silty clay and clayey silt (CL, ML, MH and CH).	48 kPA **(1 000 psf.)**

Required size of the support plate or timber blocking is calculated as follows:

$A = \sqrt{P / Pf}$ (m) or $A = \sqrt{\mathbf{P / Pf}}$ **x 12 (in.)**



Example:

ALICLIMBER APF-50A on pedestal base.
The ground consists of gravel, with allowable ground bearing pressure Pf = 96 kPA **(2000 psf.)**

Required size of the support plate is then:

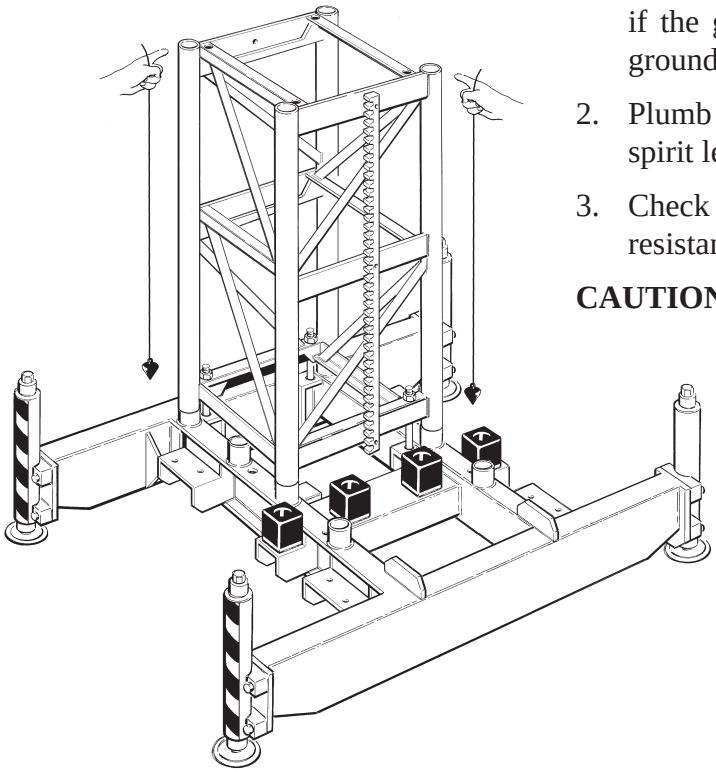
$A = \sqrt{48000 / 96000}$ = 0.7 m or

$A = \sqrt{\mathbf{10800 / 2000}}$ **x 12 = 27.9 in.**

Erection of single mast platform with pedestal base

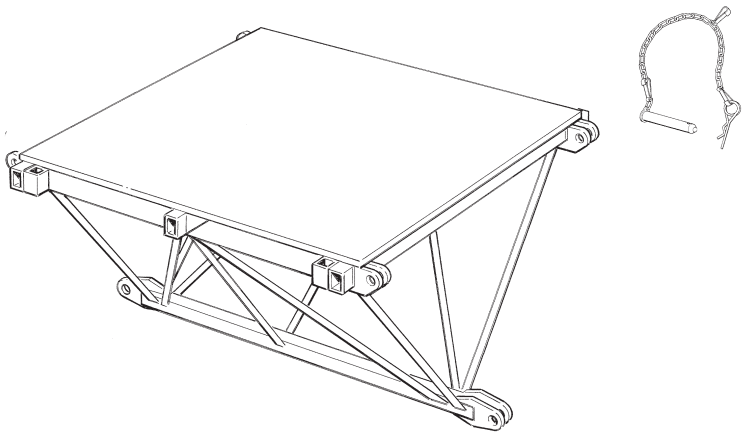
Note that mast with a pedestal base must always be tied.

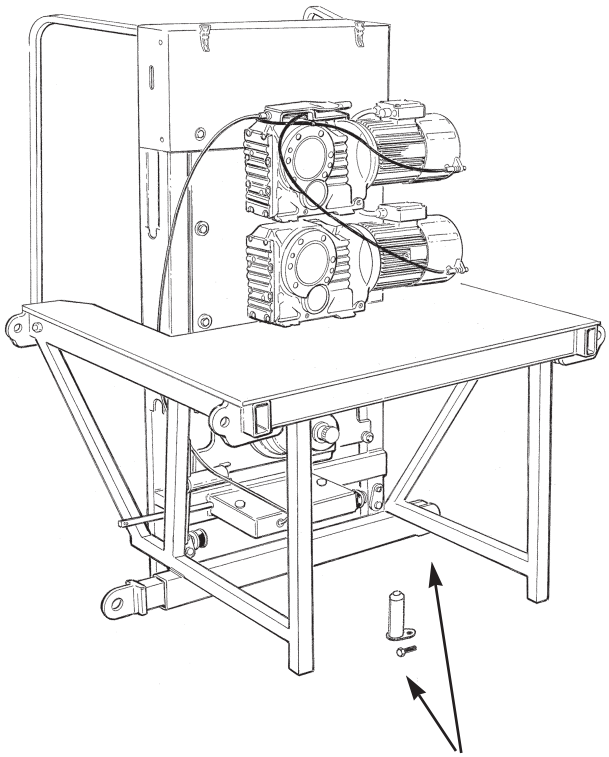
The first tie shall be mounted at a maximum height of 3 m **(10 ft.)** from the ground/foundation.



1. Check under the heading ”Ground pressure” – to determine if the ground has the required bearing capacity. Level the ground and if required insert blocking under the jack feet.
2. Plumb the mast by means of the jacks and a plumb line or spirit level in 2 directions.
3. Check that the jacks are equally loaded by comparing the resistance in the respective jack handle.

CAUTION: Ensure that the founda tion or bedding has the necessary bearing resistance. Install support timber under the pedestal base plate. Note that the pedestal base MUST NOT rest on the levelling jacks alone.

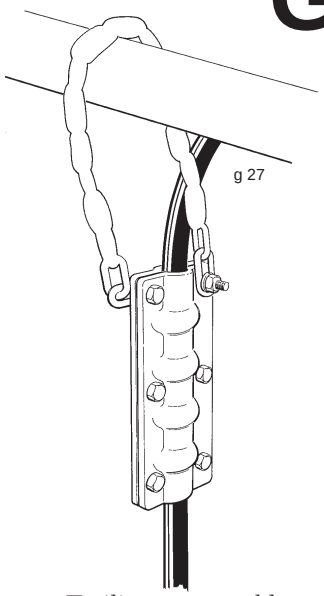




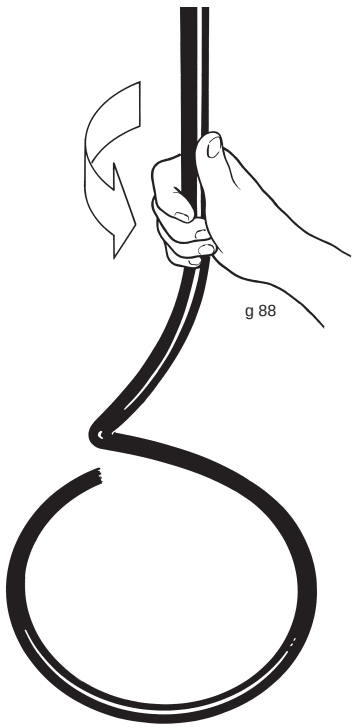
This lock pin must be installed when erecting a single mast platform

4. Install the platform sections, railing and gates in accordance with the instructions under the heading ”Assembling platform and railings”.
5. Install the stair assembly, if used, onto the brackets on the pedestal base.
6. Connect the power cable to the inlet on the platform electrical M-panel. The trailing power cable should be installed with a cable bracket and placed as far out as possible from the mast along the platform center line.

   Then place the cable on the ground/ alternately into the cable basket ***by twisting it*** so it falls by itself in spirals forming a ring with the same diameter on every coil. Try to form equal diameters and smaller then the inner diameter of the cable basket.



Trailing power cable



7. Drive the machine up in accordance with the instructions under heading ”Emergency Electrical Operation” so that the lower final limit switch leaves the cam.

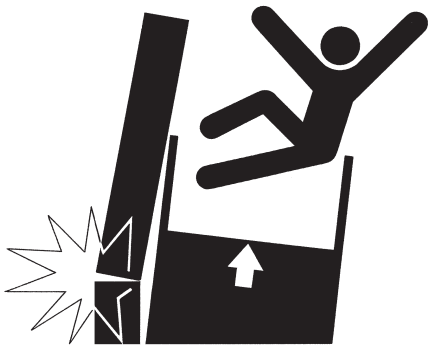
   Note that when the drive unit rests on its rubber buffers the final limit switch rests on the lower final limit cam and the platform cannot be operated.

   Erect the mast and mast ties in accordance with the instructions under the heading ”Erection of mast”.

CAUTION: Barricade the restricted area on the ground according to local regulations.

Contact ALIMAK or ALIMAK representative if mast heights above 100 meters (330 ft.) are required or if special wind conditions will require cable guides.

Erection of twin masted platform



h 44

DANGER!

Missing bolt hazard.

ONE person is to be made responsible for mast bolting to ensure that ALL mast bolts are installed and properly tightened.

Will cause severe injury or death.

The erection is made in accordance with the instructions for single mast applications with the following additions:

1. Place both the single mast platforms on prepared sites close to the face of the structure and in line.

   The distance between the masts shall be approximately 0.5 m **(1 ft. 8 in.)** longer than the complete installation will be, so that there will be sufficient space and it will be possible to assemble all the platform sections.

2. Align and connect the platforms to each other by moving one of the drive units.

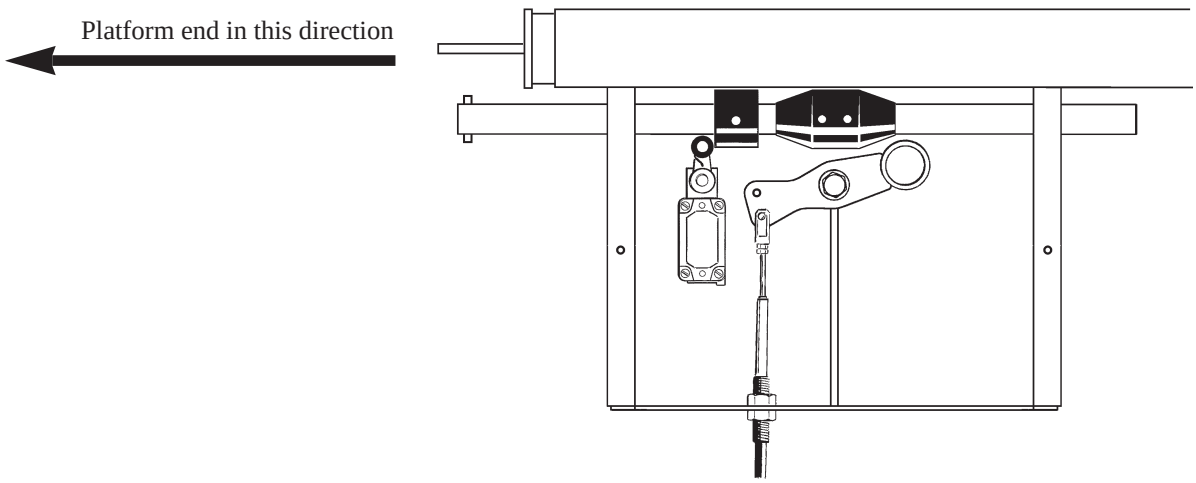
   Necessary adjustments upwards are made with the jacks or by cranking the drive unit – if there is sufficient mast height.

   CAUTION: The platforms must be in alignment when the platform ends are bolted together.

3. Prepare respective horizontal levelling equipment in accordance with the instructions below.

4. Erect both masts simultaneously.

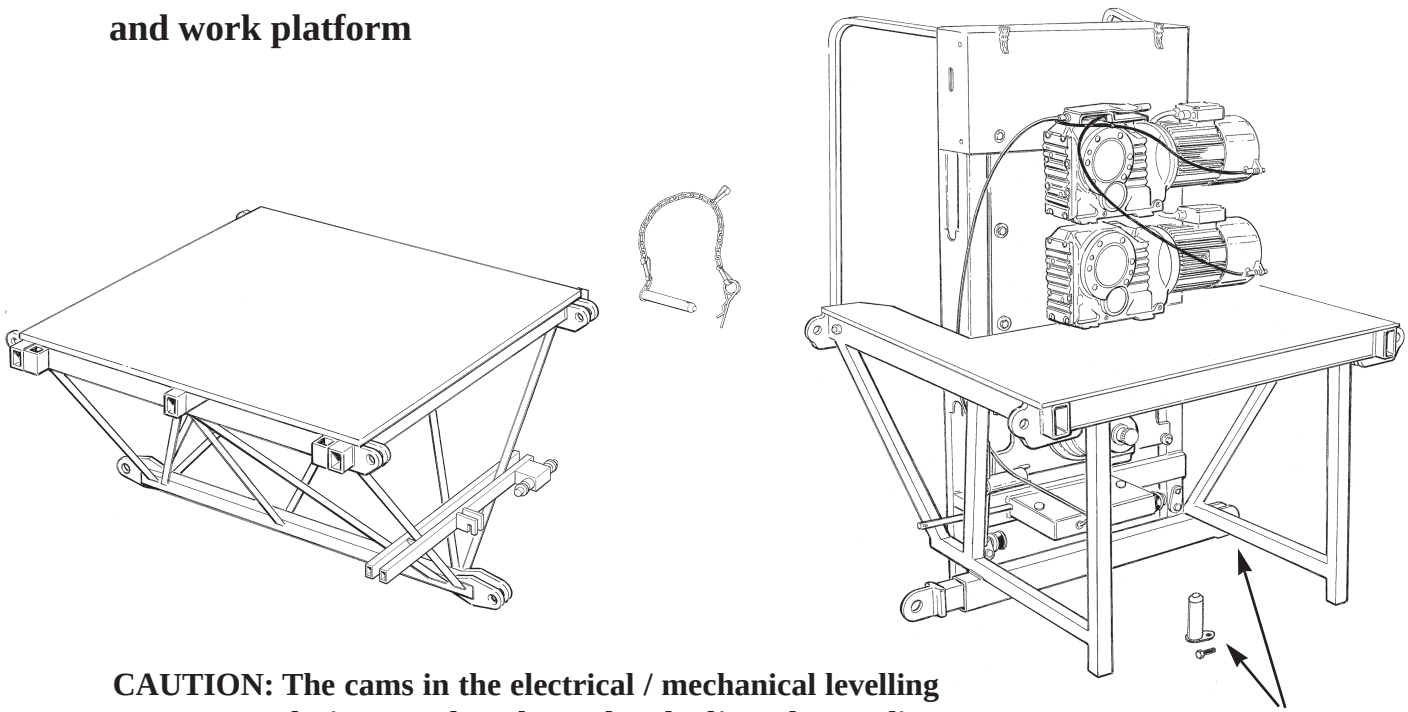
APF-50A drive unit to the left in a twin mast installation



Electrical and mechanical horizontal levelling equipment for twin mast installations

During twin configurations both drive units must be synchronized with a special electrical equipment intended for twin masts installations.
The lock pins of the pull/push rods on a drive unit type APF-50A must be removed so that the electrical and mechanical horizontal levelling equipment can work.

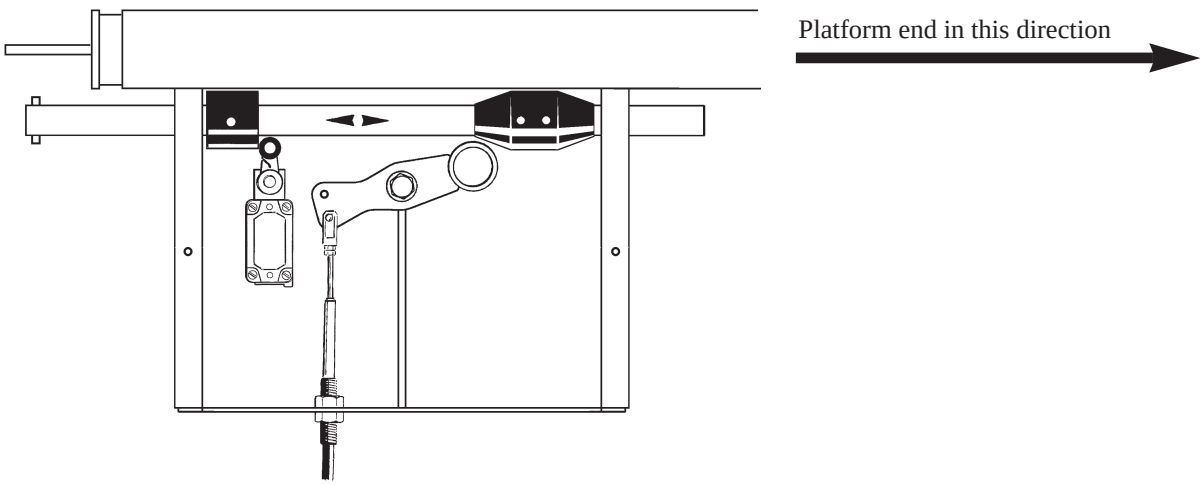
Mechanical connection to drive unit APF-50A and work platform



This lock pin must be dismantled when erecting a twin mast platform

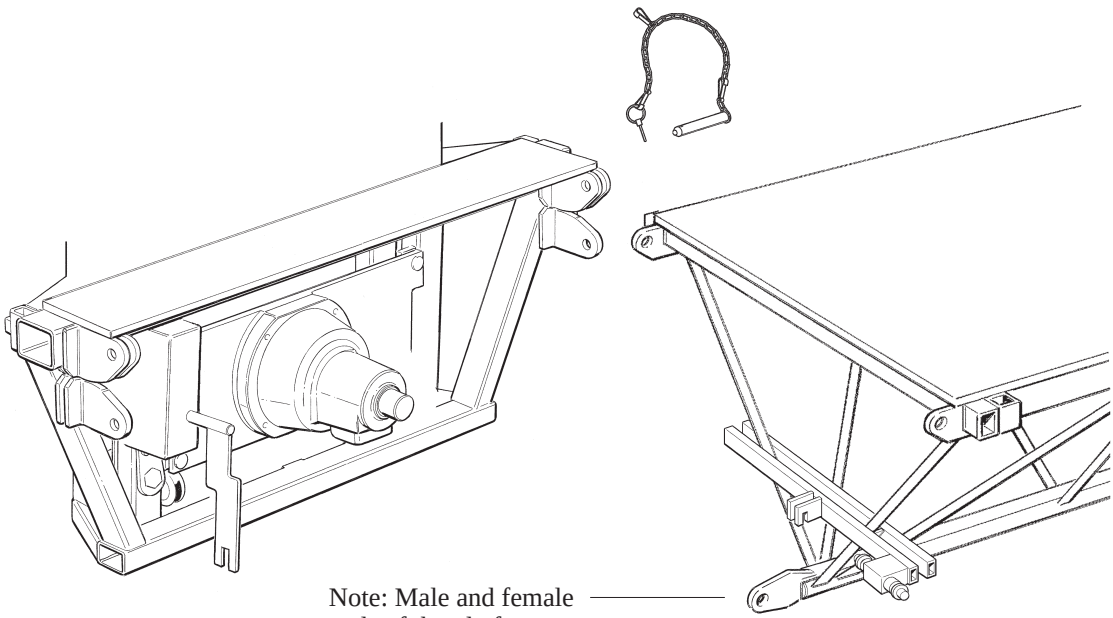
CAUTION: The cams in the electrical / mechanical levelling device must be relocated and adjusted according to the following in a twin mast installation.

APF-50A drive unit to the right in a twin mast installation



Mechanical connection to drive unit APF-50B and work platform

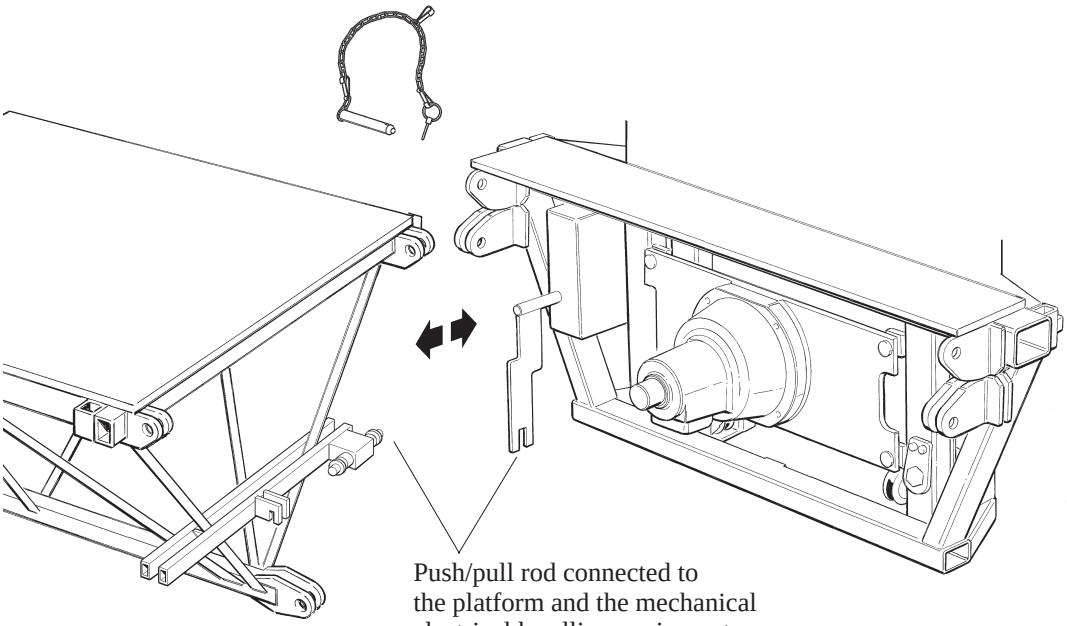
APF-50B drive unit to the left in a twin mast installation



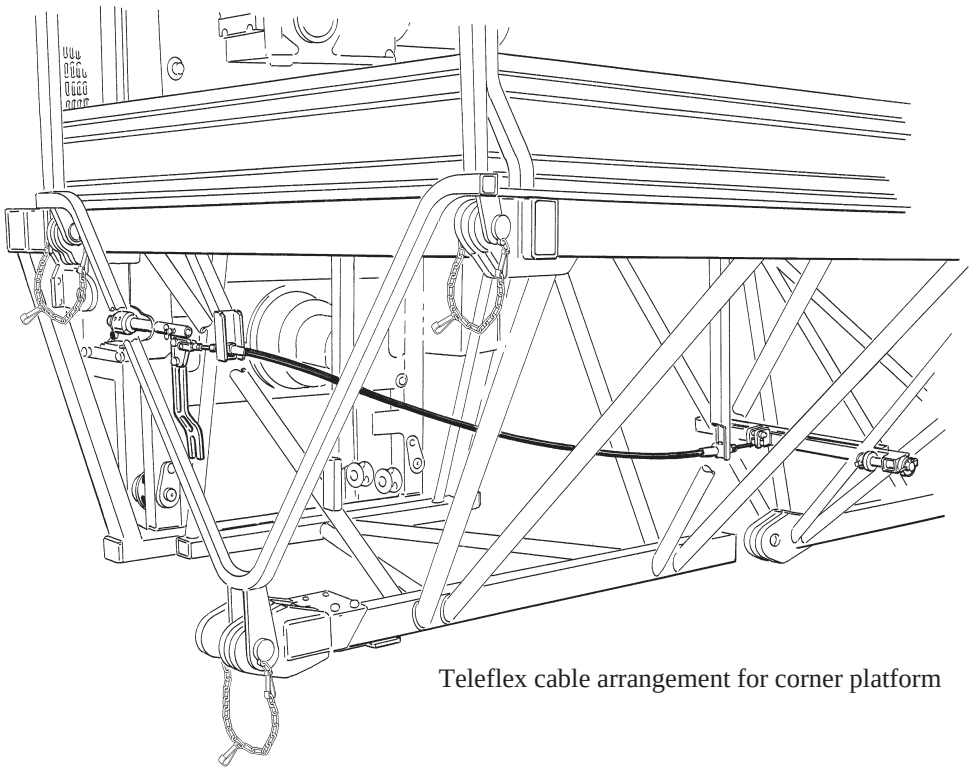
Note: Male and female ends of the platform sections.

This figure continues on the following page

APF-50B drive unit to the right in a twin mast installation



Push/pull rod connected to
the platform and the mechanical
electrical levelling equipment.



Teleflex cable arrangement for corner platform

Mechanical Horizontal Levelling Equipment

– for twin masted platforms with drive unit type B
(The type A drive unit is adjusted in a similar manner)

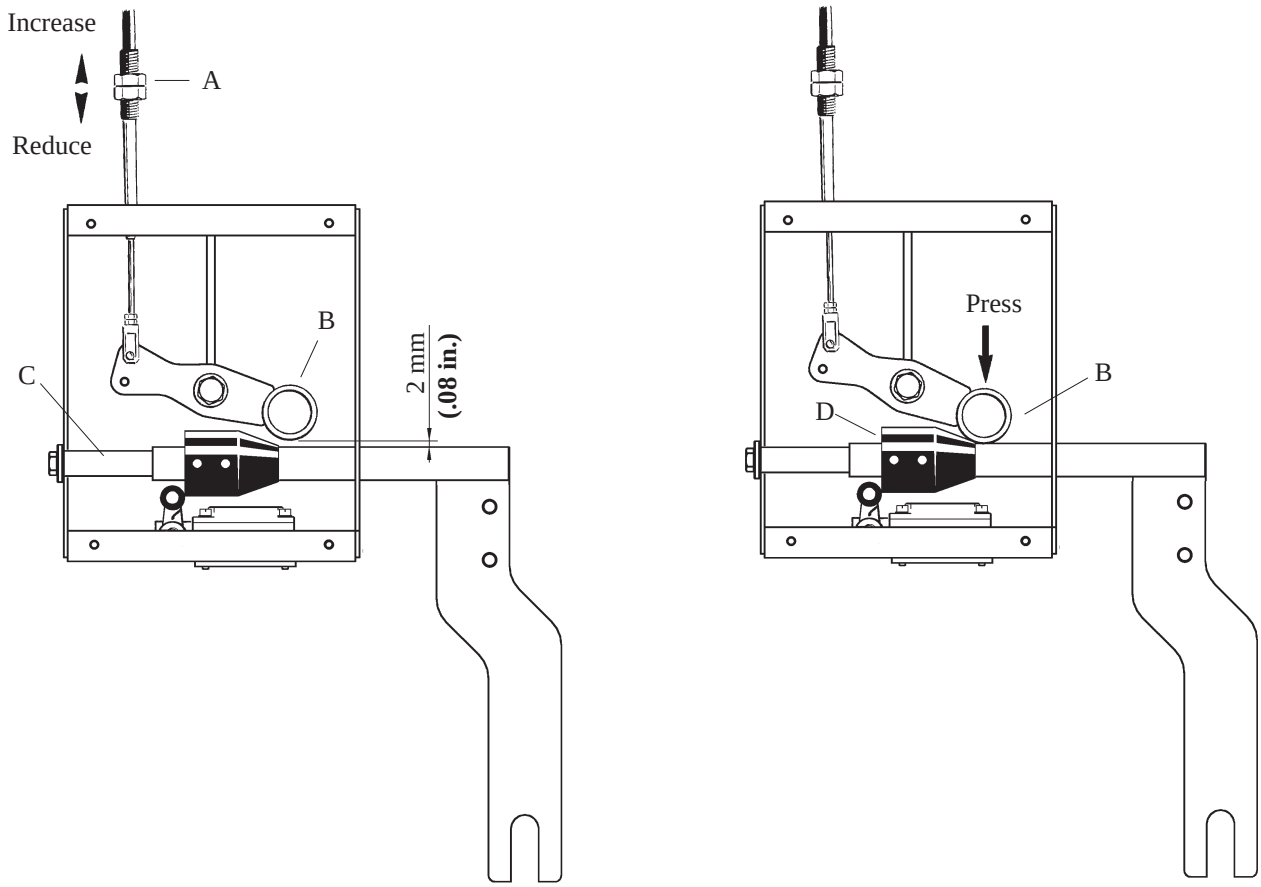
Adjustment

1. Check that the platform is level between the masts.

   If necessary slide one of the drive units to achieve this. See instruction under the headline ”Sliding”.

2. Adjust the Teleflex cable by means of the nuts (A) so that the space between linkarm (B) and push rod (C) is 2 mm **(.08 in.)**.

   If the space between (B) and (C) is too small sliding cannot take place.

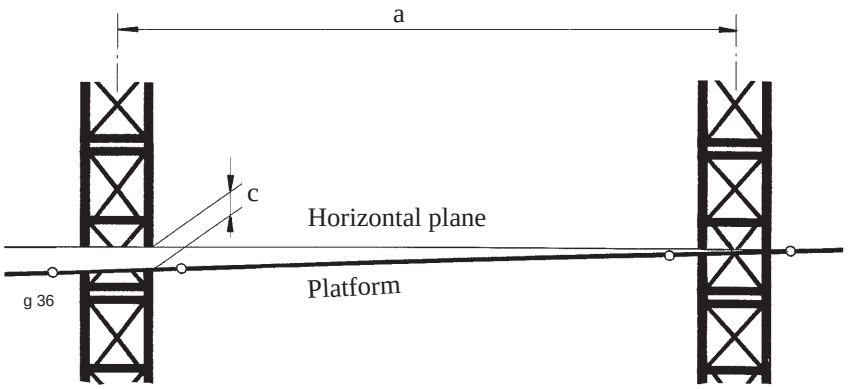


3. Release the link system and rotate down the linkarm (B) until it contacts the rod. Loosen and slide the cam (D) up against the linkarm. Tighten the cam in this position.

A similar adjustment shall be done with the other linksystem on the other drive unit.

Functional test of mechanical horizontal levelling equipment

1. Drive the platform upwards approximately 2 m **(6.5 ft.)** and then switch off the main power.
2. Check that the platform is level between the masts.
3. Mark the positions of the drive units on the mast.



4. Carefully slide one of drive units downwards until its link system is forced back so that the motor brake is locked.

   Check by means of the mark on the mast (c) that ”max. allowable difference in height” ± 2° is maintained.

   CAUTION: Immediately interrupt the function test if the platform tends to exceed the prescribed value for maximum allowable difference in height. Repeat the adjustment of arm (B) and test once again.

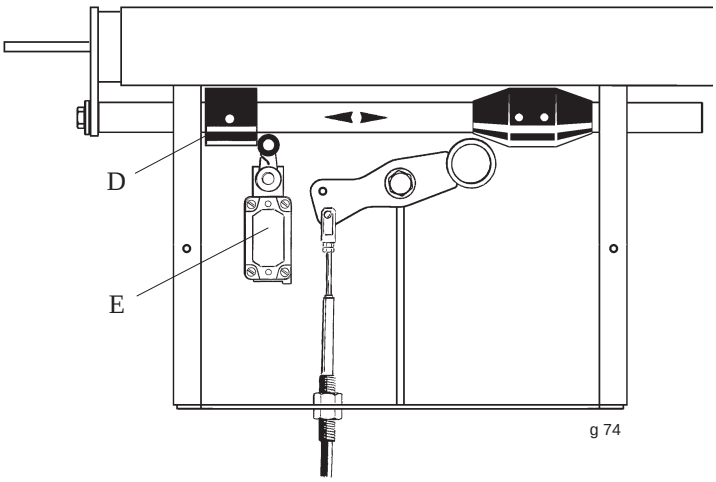
5. Dismantle the release levers after finishing the function test and return these to the document boxes.
6. Reinstall all covers that have been removed.

Electrical Horizontal Levelling Equipment

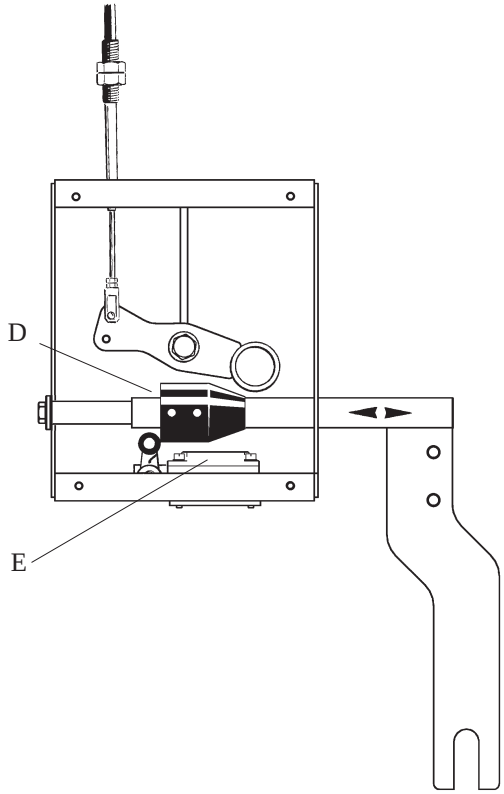
Adjustment

Adjust switches (E) so that their operators are just touching the cams (D).

Drive unit type A levelling equipment



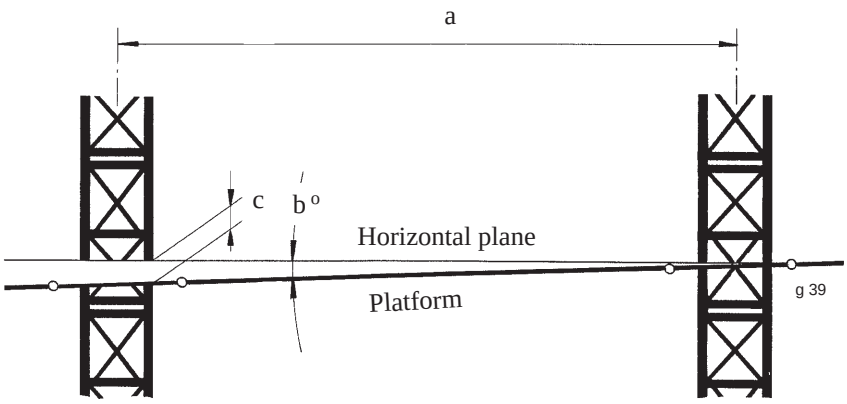
Drive unit type B levelling equipment



Functional test

Test run and check that the inclination (b) of the platform does not exceed ± 2°.

If the measures cannot be maintained – adjust the positions of the electrical switches (E).



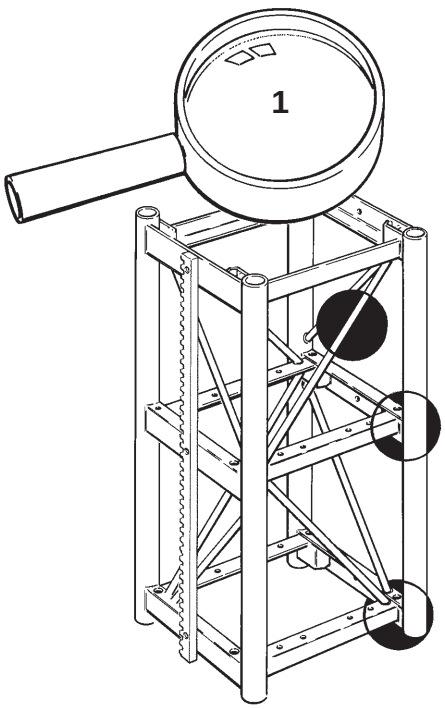
ALIMAK

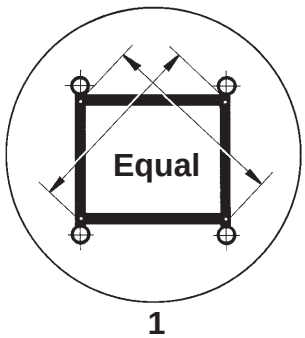
Caution ..... **H 1**
Assembling work platform and railings ..... **H 2**
1.8 m (6 ft.) extension of work platform ..... **H 3**
Extension structural tubes ..... **H 3**
Extra long 2.7m (9 ft.) extension ..... **H 4**
Railing cross members ..... **H 5**
Erection of mast ..... **H 6**
Canopy/Weather protection ..... **H 15**
Final operation before inspections ..... **H 12**

CAUTION:

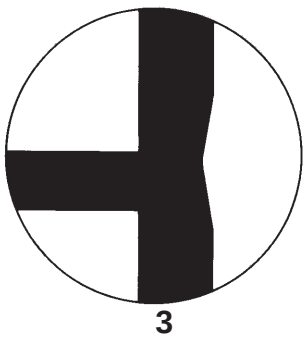
Before installation of the mast, mast ties and platform sections, visually check for structural damage such as deformation, cracks and corrosion.

If any structural damage or severe corrosion is seen on such items as mast sections, mast ties or other load carrying members, the platform must be immediately taken out of service and the extent of the damage be determined. Corrective action must be taken before the platform is put into service again.





1



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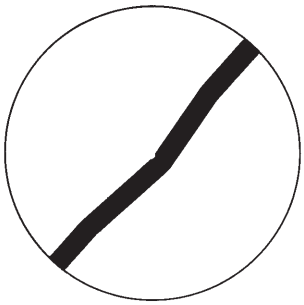

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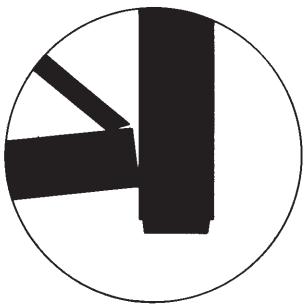
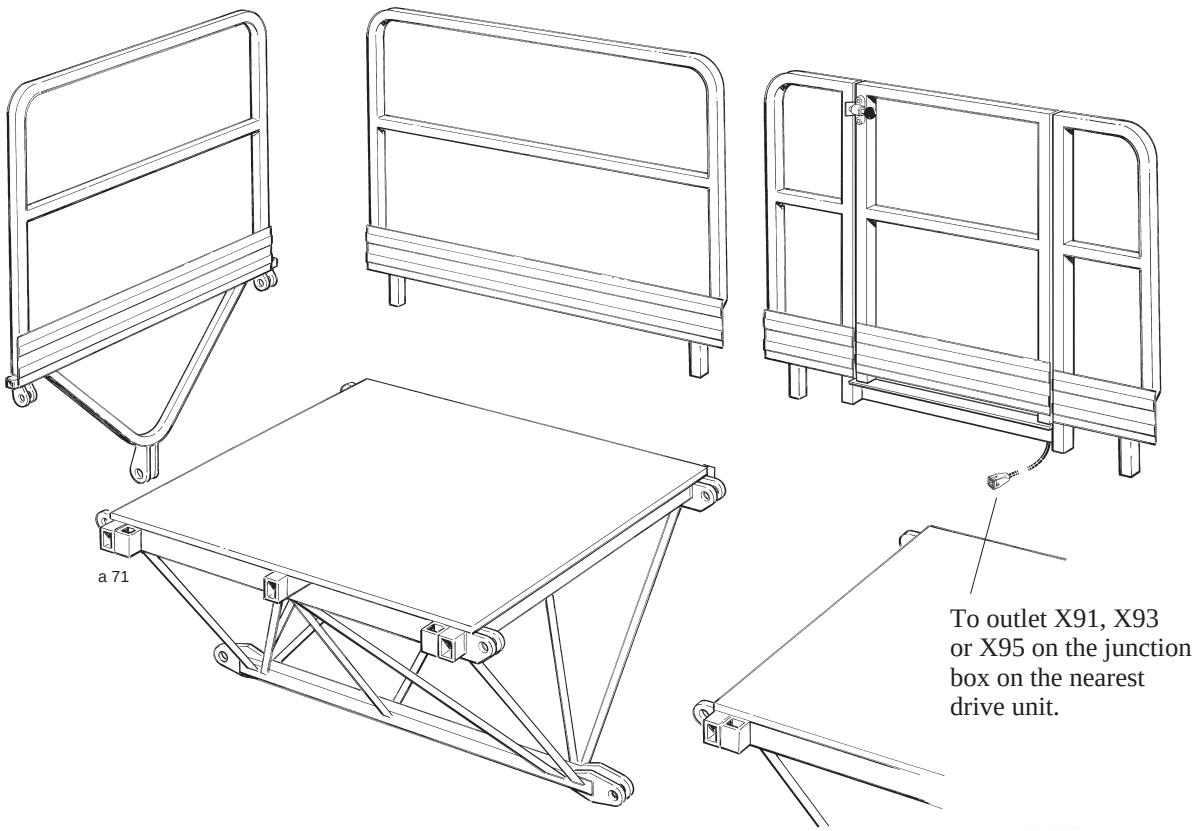
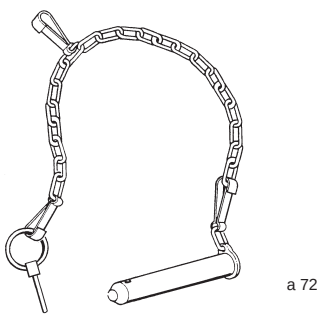


4

Assembling work platform and railings

A-50 System Mast Climbing Work Platforms (APF) can be erected as a single or twin masted platform. By a combination of 1.5 **(4 ft. 11 in.)** and/or 0.82 m **(2 ft. 8 in.)** platform length sections the platform can be adapted for most installations.





Details for assembling platform sections

However, the following conditions must always be fulfilled:

– For single masts the platform length on each side of the mast shall be equal if possible. The difference may only be ***one*** platform section of 1.5 m **(4 ft. 11 3/8 in.)**. The longer end shall be dimensioned with regard to allowable max. load.

– The shortest distance between the masts for a twin mast work platform is 3 platform sections**.**

– ***For twin mast platforms with drive unit type A:***
Only 2 1/2 platform sections are allowed on the outside end of each mast.

– ***For twin mast platforms with drive unit type B:***
Platform sections are not allowed on the outside end of each mast.

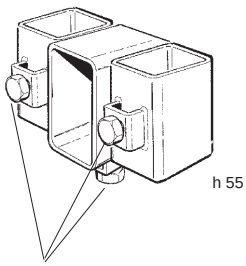
CAUTION: If a type A drive unit is combined with a type B – always start the platform assembling from the type A drive unit first, due to the fixed platform male/female platform brackets on the drive unit.

Max. 1.8 m (6 ft.) extension of platform

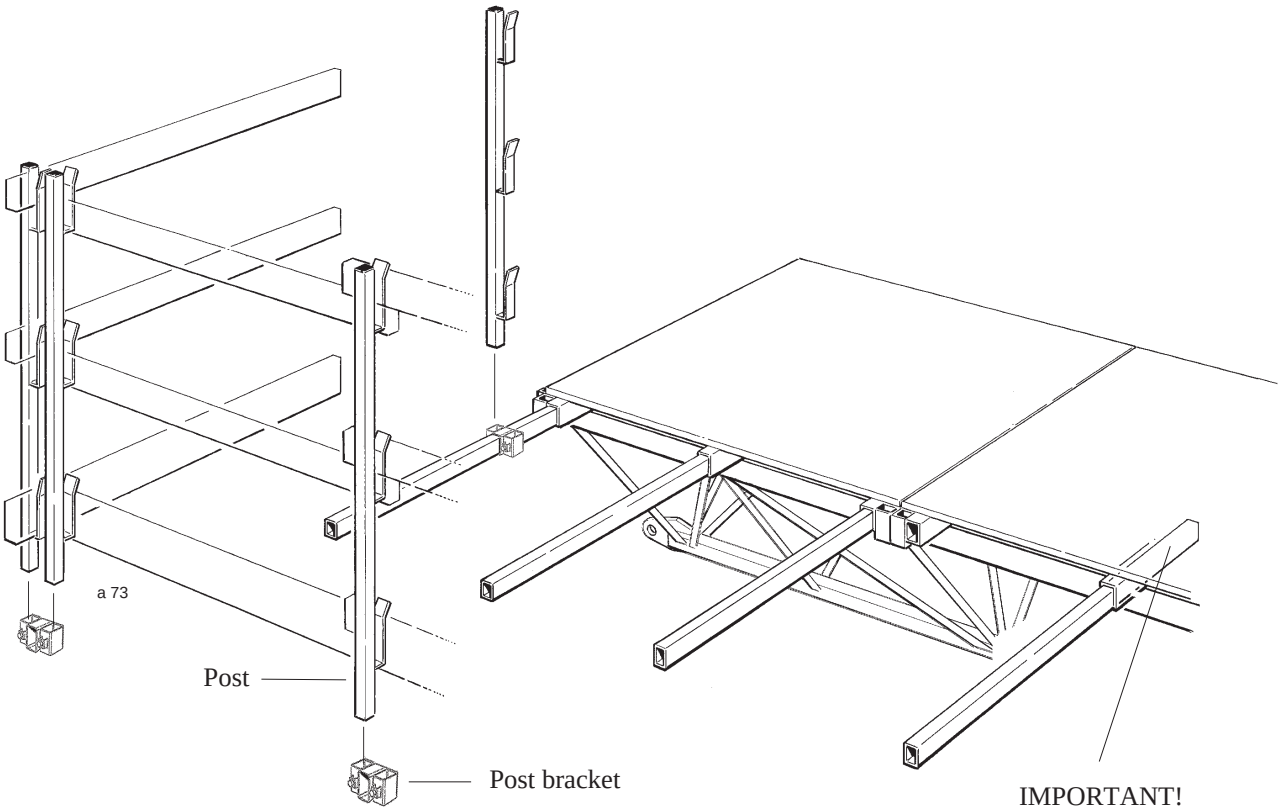
Extension of the platform is made by extension beams, post brackets and posts according to the figure below.

The extension platform is built to accept planks of pine or spruce dimension 32 x 125 mm **(1 1/4 x 5 in.)** or wider. Alternatively water resistant plywood minimum thickness 12 mm **(1/2 in.)** can be used.

When extending the platform the maximum allowable live load on the platform must be reduced by the total dead weight of the extension.



IMPORTANT!
Do not forget to
secure railings with lock bolts.



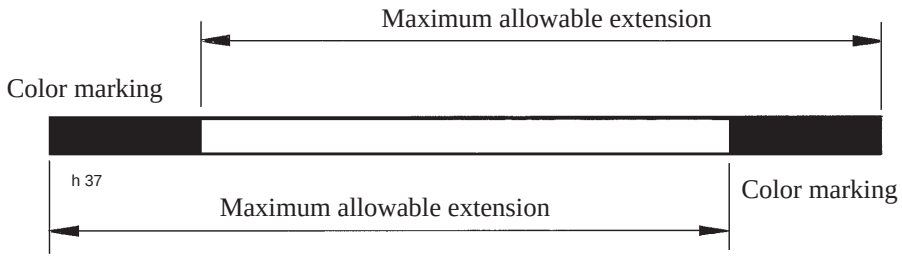
IMPORTANT!
The extension beams must
be secured with lock bolts.

Extension of work platform with tied mast

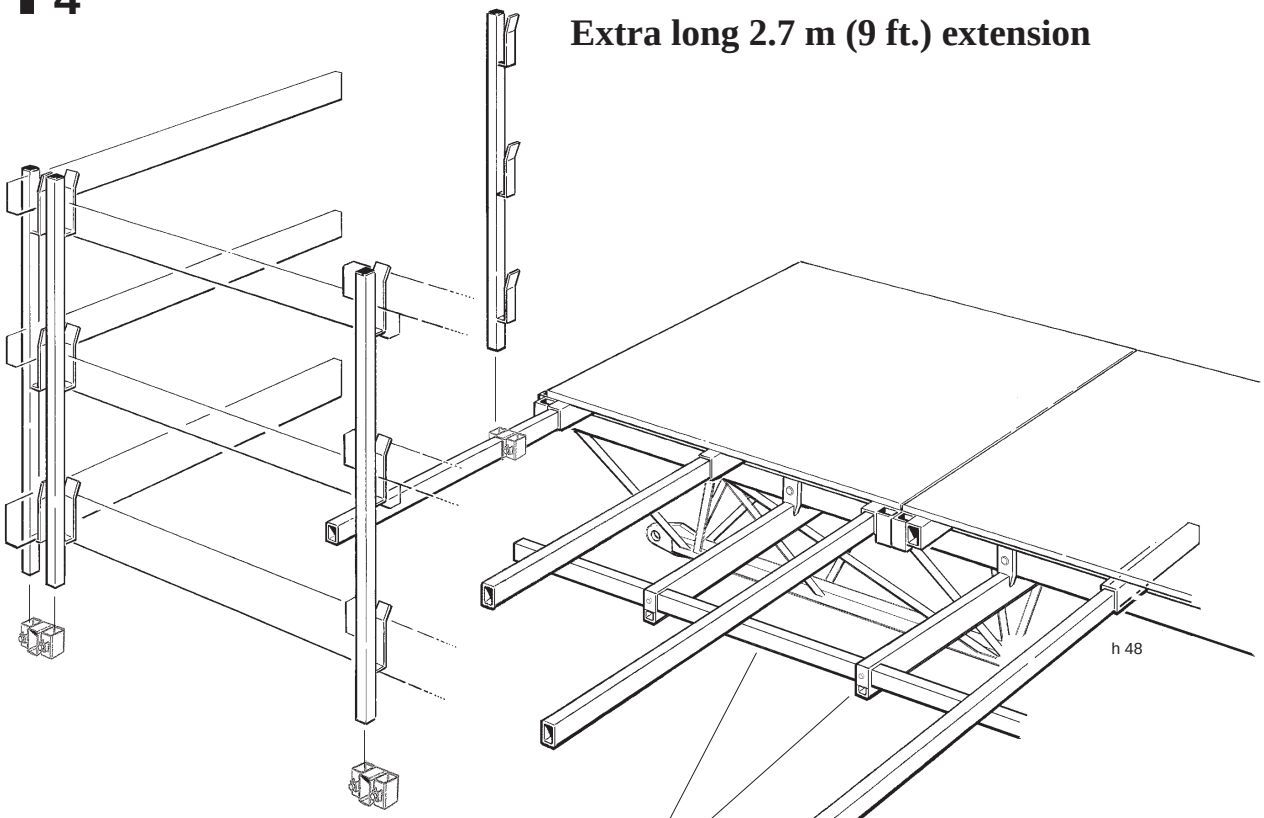
Platforms extension cannot be located directly behind the mast.

Extension structural tubes

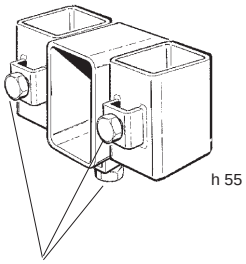
Extension structural tubes must be of quality of at least SS 2134 **(ASTM A500 Grade B)** and color marked according to the figure below to indicate when the max. allowable extension is reached



Extra long 2.7 m (9 ft.) extension



Reinforcement for extra 2.7 m **(9 ft.)** long extension



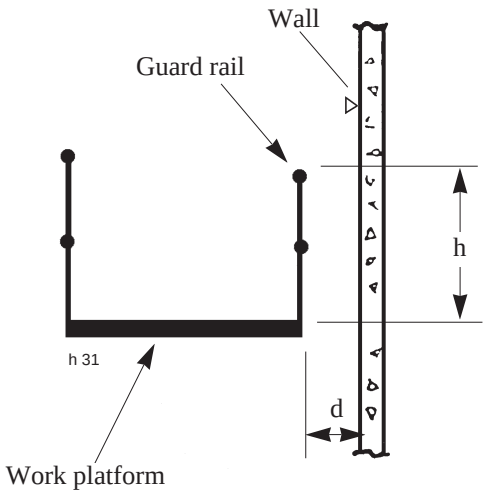
IMPORTANT!
Do not forget to
secure railings with lock bolts.

Height of guard rails according to EN 1495

Local regulations must govern if more stringent.

d (m)	≤ 0.3 m **(≤ 12 in.)**	0.3 ≤ **d** ≤ 0.5 m **(12 in. ≤ d ≤ 20 in.)**	> 0.5 m **(> 20 in.)**
h (m)	0 **(0)**	≥ 0.7 [1] **(≥ 27.5 in.[1])**	≥ 1.1 [2] **(≥ 43 in. [2])**

[1] without midrail [2] with midrail



Height of guard railing according to ANSI/SIA A92. 9 - 1993 (or OSHA)

On all exposed sides ”h” = 42” ± 3” **(1070 ± 75 mm).**

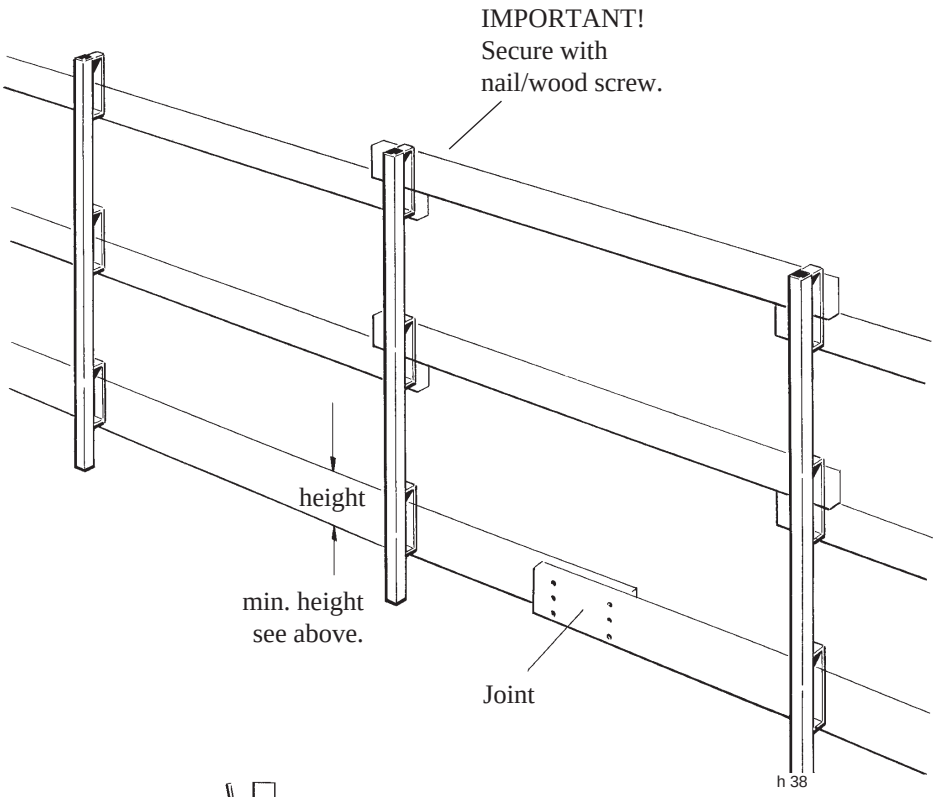
Distance ”d” determines the use of guard railing according to local regulations.

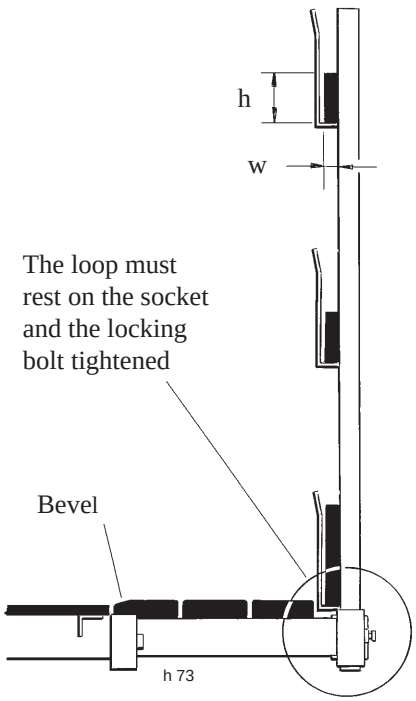
Railing Cross Members

The railing cross members shall be of high quality (for example pine or spruce) with dimensions as per figures below for different distances between the posts. Ensure the wood is in good condition (i.e. no cracks, warps, knot holes).

Note! The height of the toeboard shall not be less than:

minimum height 150 mm **(6 in.)** according to EN 1495.
minimum height 4 in. **(100 mm)** according to OSHA (or ANSI/SIA A92.9-1993).





Railing cross members according to EN 1495:

Maximum distance between the posts	Minimum dimension. Top rail, midrail and toeboard w x h
1.5 m **(5 ft.)**	25 x 100 mm **(1 x 4 in.)**
2.5 m **(8 ft.)**	25 x 125 mm **(1 x 5 in.)**
3.5 m **(11.5 ft.)**	32 x 125 mm **(1- 1/4 x 5 in.)**

Railing cross members according to OSHA:

Maximum distance between the posts	Minimum top rail, w x h	midrail and w x h	toeboard w x h
8 ft. **(2.5 m)**	2 x 4 in.	2 x 4 in.	1 x 4 in.

Erection of mast

To be carried out by trained service personnel.

The erection crane is mounted into one of the two sleeves on the drive unit. The mast sections can then be lifted to the platform from the ground level. Always have the mast sections close to the site of erection, and on dry firm ground.
Note that the maximum allowable load of the erection crane can only be lifted vertically. Do not exceed the maximum allowable load of the platform.

During mast installation cable guides and ties should be installed at prescribed elevations. See chapter K.

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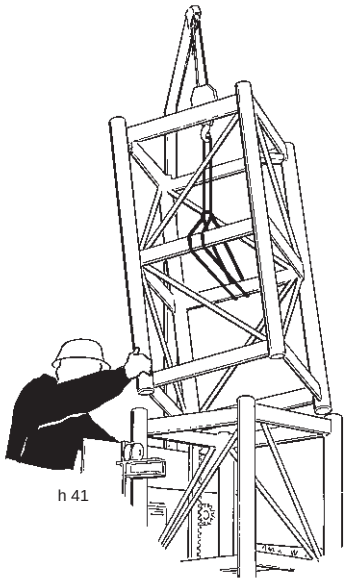
DANGER !

Crushing hazard.

When platform is moving, always stand inside platform railing to avoid being crushed by balconies, scaffolds or other protruding structures.

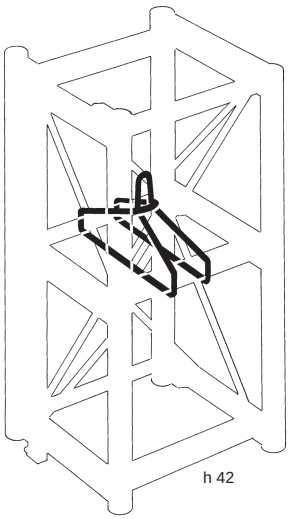
Will cause severe injury or death.

1. Lift one mast section with the erection crane and grease the guiding cones. Swing the section over the mast top, lower and install mast bolts, tighten them. Insert mast bolts with the nut located on top.
   Tightening torque: 350 Nm **(258 lbf x ft).**



h 41

Use the lift sling as illustrated.



h 42

2. Drive the platform up so that the final limit switch leaves the cam. See instructions under the heading ”Safety limit override operation” – chapter D in this manual.

3. Check that the normal lower limit and final lower limit cams are correctly mounted and that their attachment bolts are properly tightened. Make a function test by driving downwards onto the cam.

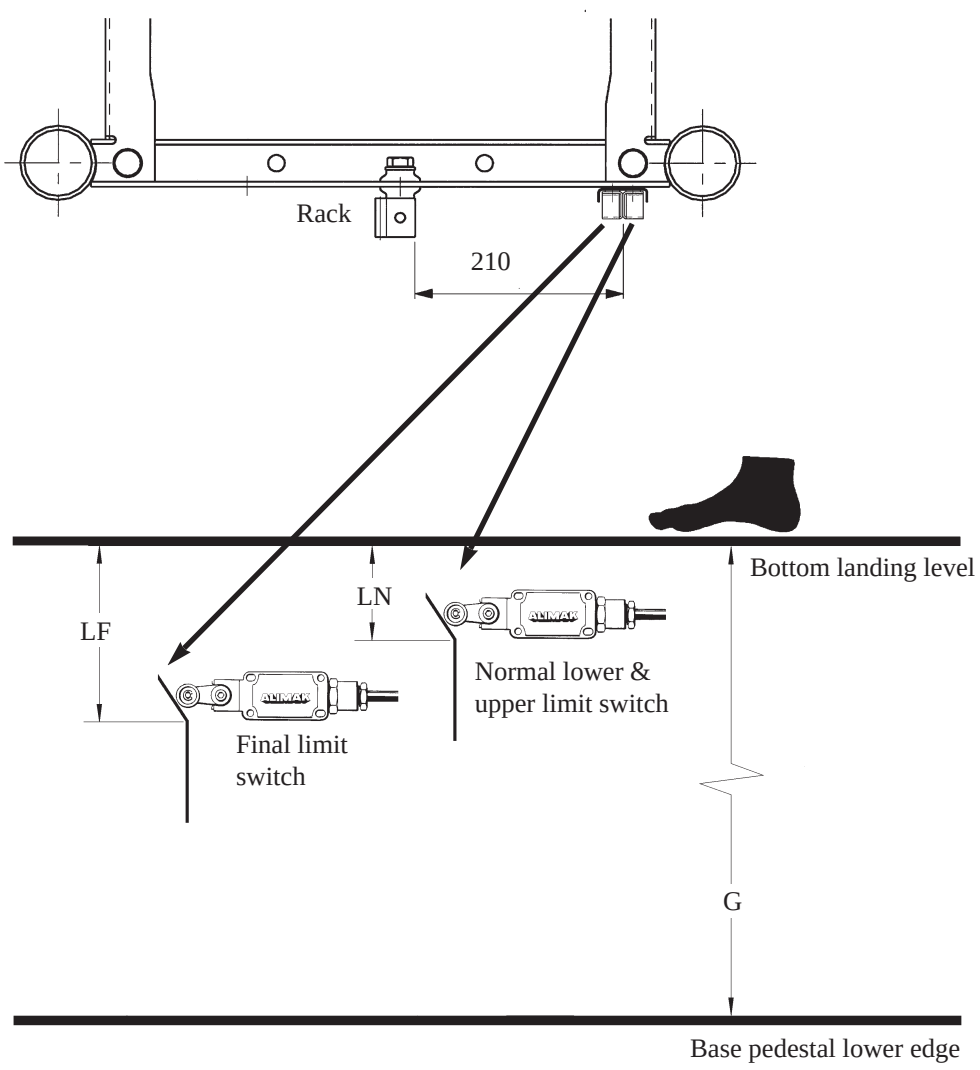
Lower normal and final limit cams

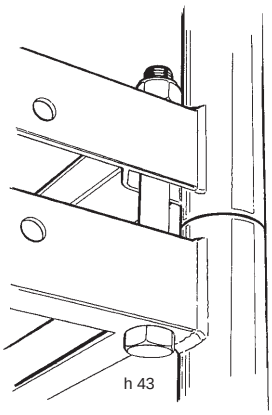
Lower limit cams settings.

NOTE! These are only preliminary adjustments.
To be re-adjusted after final commissioning.

Measure	G	LN	LF
Work platform APF-50A & APF-50B	1235 mm **(48.62 in.)**	– 110 mm **(– 4.33 in.)**	– 150 mm **(– 5.90 in.)**

(–) = below bottom landing level.





IMPORTANT: Always install mast bolts so that the nut is on top as shown.

4. Drive the platform carefully up as close to the mast top as possible in order to install the next mast section.
   Connect and lift one mast section, grease and swing the section out, lower and bolt.
   Note that mast sections must not hang from the erection crane during operation of the platform.

5. Erect the remaining mast sections until required mast height is achieved. Tie the mast as prescribed.

   CAUTION: Safety device test with erection load on the platform must be performed as soon as a mast height of 5 m (17 ft.) is reached.
   See instructions for safety test execution in chapter "Safety device test" in this manual.

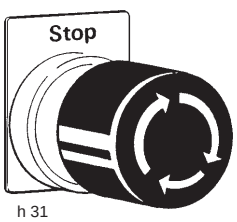
DANGER !

Missing bolt hazard.

Tighten all mast bolts on previously installed mast sections before disconnecting mast section from erection crane.

Will cause death or personal injury.

Emergency stop button located on platform electrical M-panel.



Turn the button to reset the switch.

WARNING!

Unintentional moving.

Always depress the red "Emergency stop"-button to prevent unintentional moving while work is carried out on the mast.

Can cause severe personal injury or death.

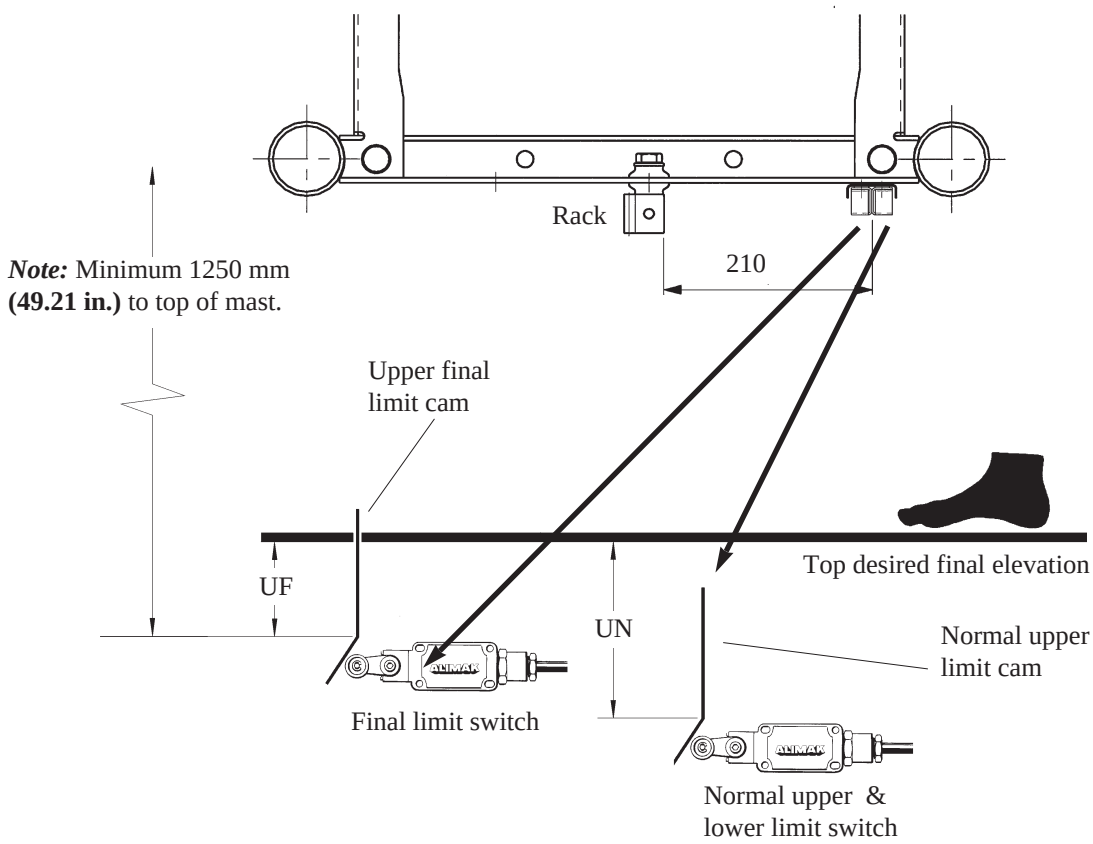
6. Install the upper normal limit and final limit cams in the pre-drilled holes on the top mast section
7. Put covers on the top mast section tubes.
8. Make a function test of the normal limit switch by driving onto the limit cam located on the top mast section.
9. Retighten all mast bolts on the way down. Tightening torque 350 Nm **(258 lbf x ft).**
10. Install the mast protection screens on the drive unit/-s.

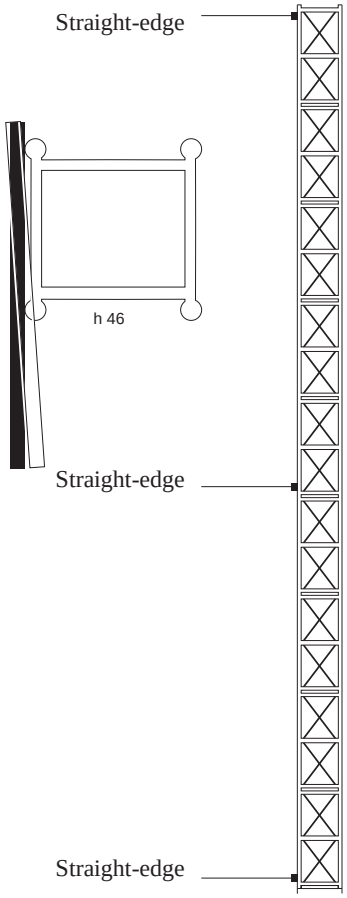
Upper normal and final limit cams

Upper limit cams settings.

Measure	UN	UF
Work platform APF-50A & APF-50B	– 150 mm **(– 5.90 in.)**	– 110 mm **(– 4.33 in.)**

(–) = below desired final elevation.





Perpendicularity of the mast

Check possible out-of plumbness of the mast with a plumb line, spirit level or a theodolite, when installing the first tie. If a correction required, adjust it by means of the mast tie.

When installing additional ties check verticality with a long straight-edge rule, using the ground level plan and first tie as references. Use a theodolite if desired, but never use a spirit level above the first tie.

The use of a straight-edge will also indicate if the mast is twisted.

Try to use the same or as few references as possible for the entire mast installation.

Straight-edge rules may be fabricated on site. As an example, they can be a 2” x 4” x 1.5 m **(5 ft)** long piece of timber and be attached to the mast with tie wire. The straight-edge must be properly attached.

CAUTION: Remove straight-edges after the mast has been installed.

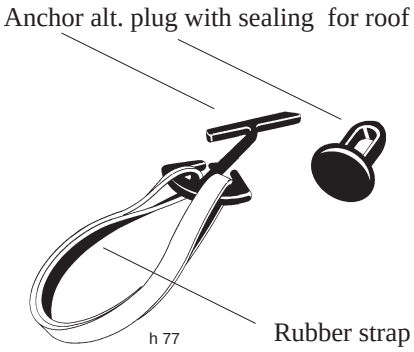
Canopy/Weather protection

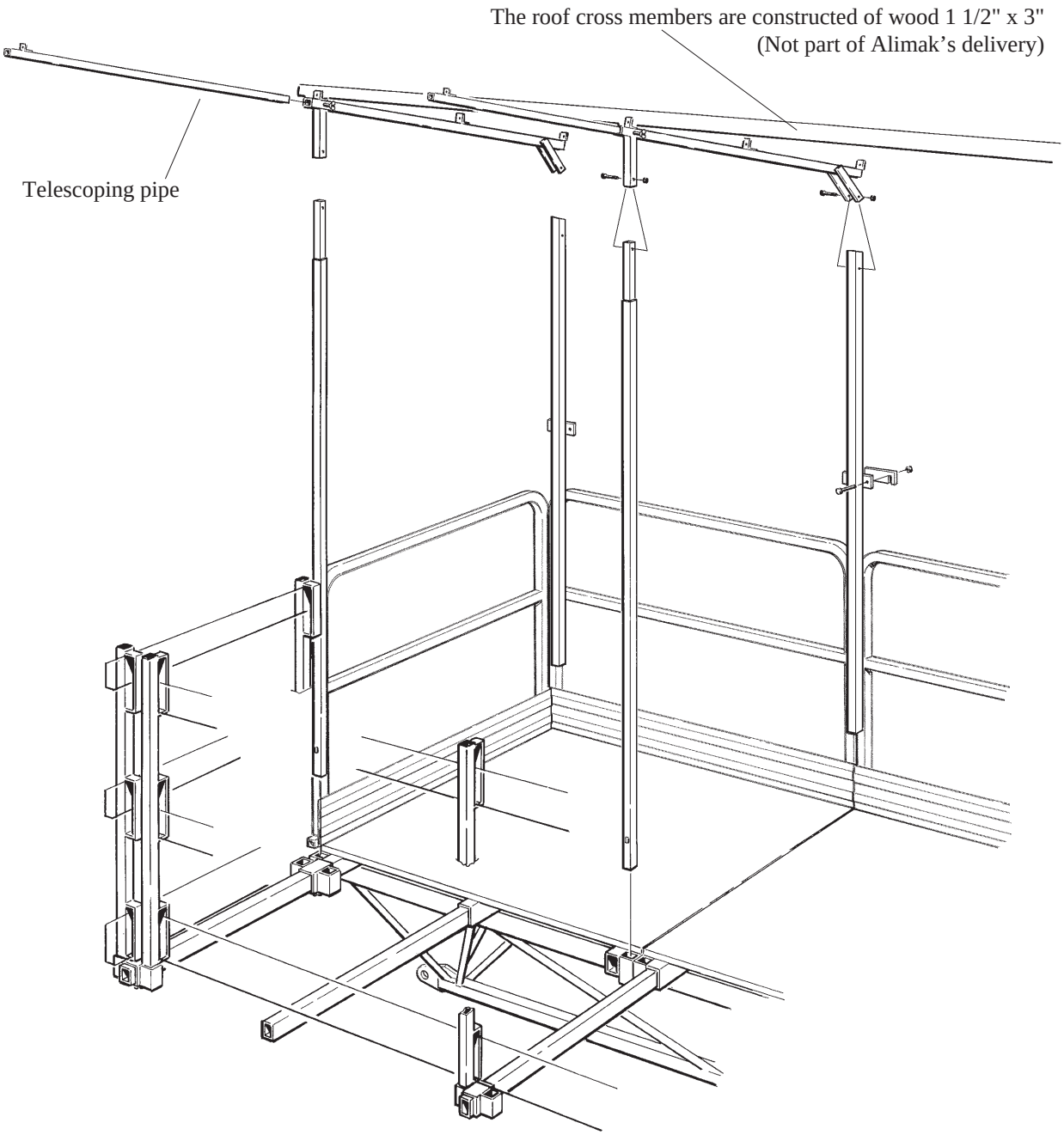
The weather protection frame is assembled in accordance with the figure below and covered with reinforced plastic cloth.

The cloth is attached with rubber straps and anchors into existing reinforced grommets in four rows at a distance of l m **(3 ft.)** along the cloth. Holes in the cloth for mast(-s) and gate are cut with a knife.

Note – If the plastic cloth is properly stretched the wind forces will be reduced.

It is forbidden to use the canopys/weather protection with free standing Aliclimbers.





Final operation before inspection

1. Remove the erection crane and all erection equipment from the platform.
2. Execute service according to ”Service and Maintenace” Schedule with the exception of items 2, 27, 28, 40, 41, 50, 52, 53 and 54 according to chapter “Service and Maintenance”.
3. Instruct the operator/-s regarding safety, safety regulations, operating instructions, service and maintenance.

THE PLATFORM IS NOW READY FOR INSPECTION !

Mast ties ..... **I 1**
Tie forces ..... **I 2**
Tie distances ..... **I 4**

Mast ties

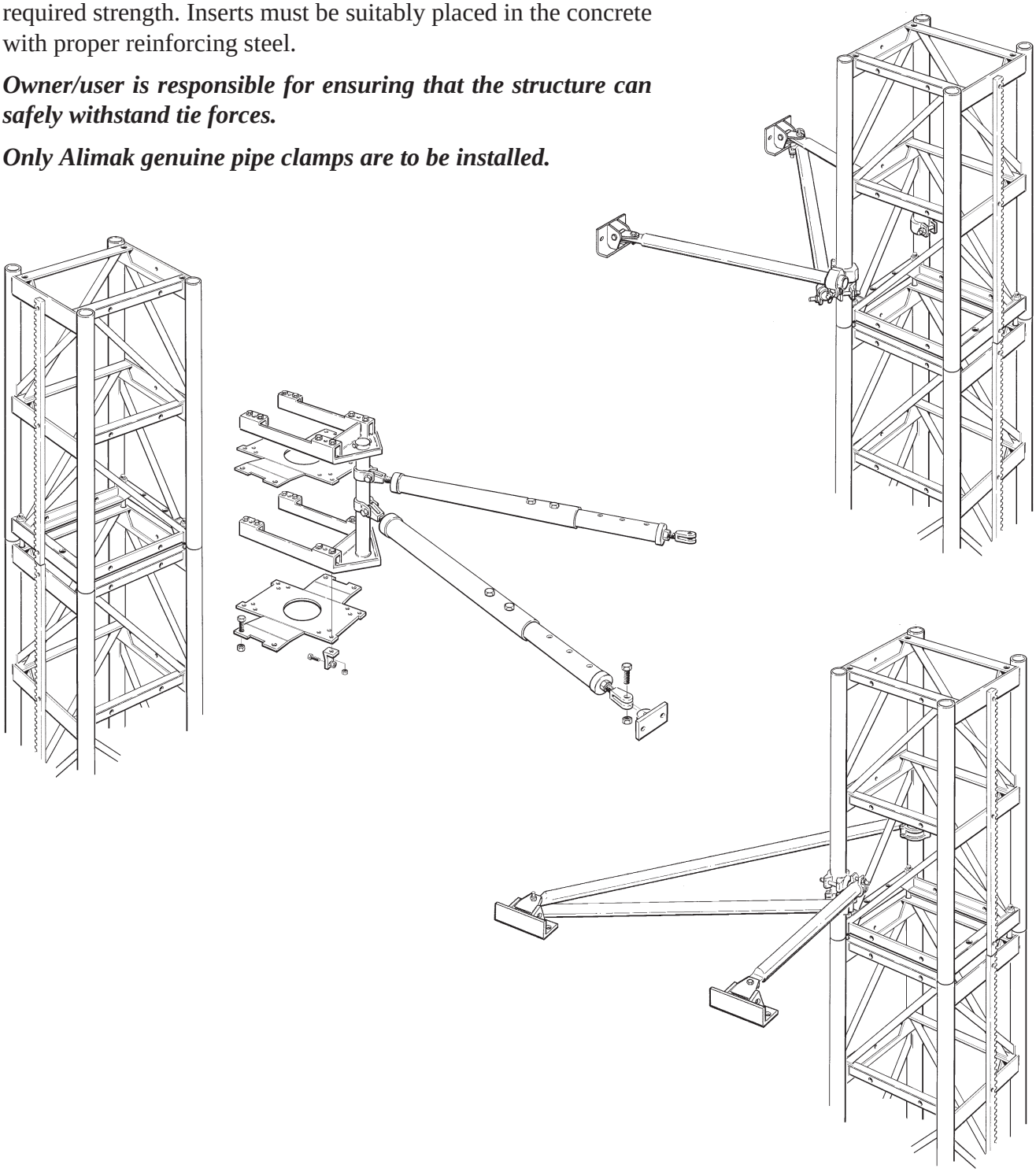
Tying of the mast is dependent upon the desired mast height. If the platform is equipped with mobile chassis, pedestal base or protective canopy the mast must be tied in accordance with instructions listed above. For each installation and set-up, the type of tie must be chosen to suit the particular installation.

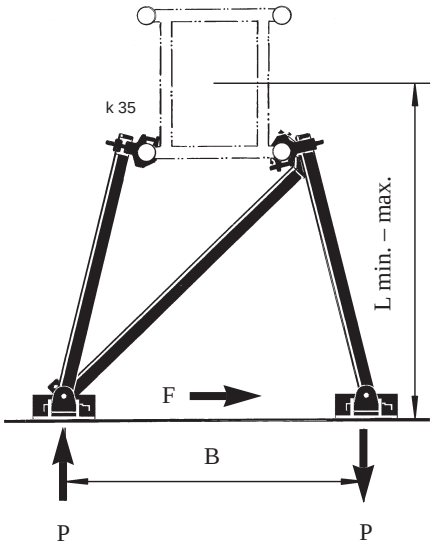
When using mast ties the mast must ALWAYS be facing the structure face,

Where ties are to be attached to cast in place inserts, this must take place early enough to ensure the concrete is cured and at its required strength. Inserts must be suitably placed in the concrete with proper reinforcing steel.

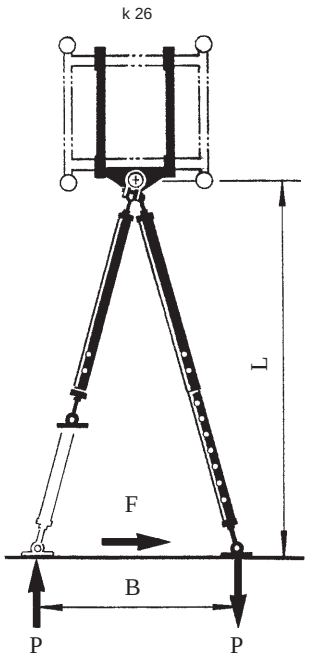
Owner/user is responsible for ensuring that the structure can safely withstand tie forces.

Only Alimak genuine pipe clamps are to be installed.





Mast tie Part. No.	L mm min. – max.	B mm
9069 199-080	min. 650	700 – 760
	max. 900	830 – 1100
9069 199-115	min. 900	830 – 1110
	max. 1250	1000 – 1450
9069 199-155	min. 1250	1000 – 1450
	max. 1650	1250 – 1650
9069 199-195	min. 1650	1250 – 1650
	max. 2050	1500 – 1650



As this tie cannot take up the torsional force from the mast it shouldn´t be used for single mast platforms at heights above 30 m **(100 ft.).**

Mast tie type R2A

The tie is preferably intended for single and twin mast installations with drive unit **type A**. The tie can also be used with drive unit **type B** – but only with one drive unit on the mast!

The tie is steplessly variable in vertical direction. The tie width varies depending upon chosen length of the tie.

The distance between the wall and the mast center for this tie type is anywhere from a minimum of 650 mm to a maximum of 2050 mm.

Max wall force P is calculated according to the following formula:

$P = \frac{L \times 12000}{B}$ Newton (L and B in mm) F = 12000 Newton

Mast tie type 31A
– to be used with drive unit Type B only!

This tie is primarily used for twin masted installations. The tie is variable in the vertical direction. The tie width varies depending upon the chosen length of the tie, which is variable within 690 mm **(27.2 in.)**. The distance between the face ot the structure and the platform for this tie type is a minimum of 1130 mm to a maximum of 1820 mm **(min. 44.6 in. – max.71.6 in.)**.

L mm	B min. mm	Mast tie Part number	Embedment set Part number
1165 **(45.8 in.)**	625 **(24.6 in.)**	9050 264-100	9002 931-000
1300 **(51.2 in.)**	696 **(27.4 in.)**	– ” –	– ” –
1400 **(55.1 in.)**	750 **(29.5 in.)**	– ” –	– ” –
1500 **(59.0 in.)**	804 **(31.6 in.)**	– ” –	– ” –
1600 **(59.0 in.)**	858 **(33.8 in.)**	– ” –	– ” –
1700 **(66.9 in.)**	911 **(35.8 in.)**	– ” –	– ” –
1855 **(73.0 in.)**	995 **(39.2 in.)**	– ” –	– ” –

Max force P. is calculated according to the following formula:

$P = \frac{L}{B} \times 10600 \times R_1 \times R_2 \times R_3$ **[**Newton **(x 0.225 = lbf.)]**

Max force in bolt $P_S = 0.66 \times P$

Force F, parallel to the structures face

$F = 10600 \times R_1 \times R_2 \times R_3$ **[**Newton **(x 0.225 = lbf.)]**

R_1, R_2 and R_3 are reduction factors as a result of overhang, tie

Mast tie type S4A (ø 48.3 mm)
– to be used with drive unit Type B only!

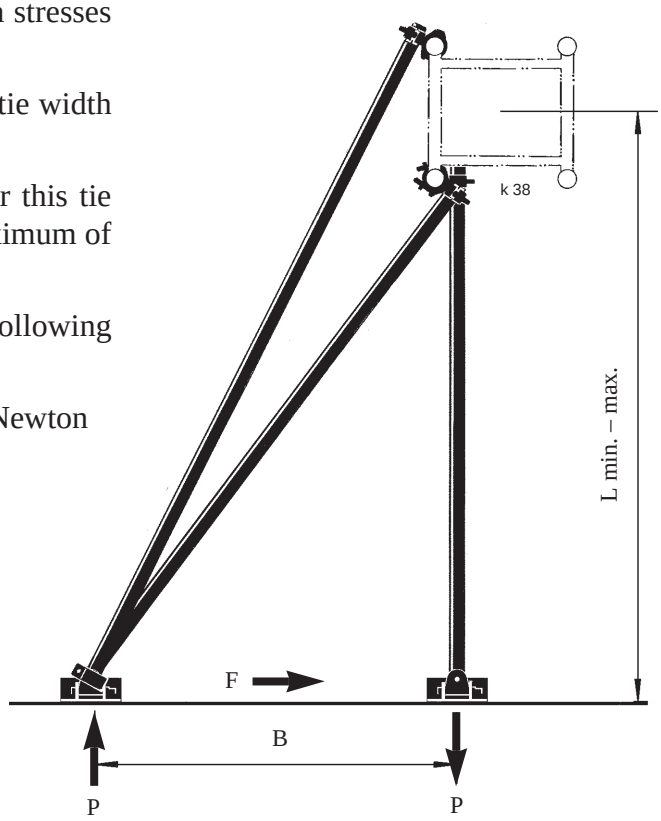
This tie is used for single masted installations – but only with one drive unit on the mast! The tie takes up the torsion stresses of the mast.

The tie is steplessly variable in vertical direction. The tie width varies depending upon chosen length of the tie.

The distance between the wall and the mast center for this tie type is anywhere from a minimum of 600 mm to a maximum of 2050 mm

Max wall force P is calculated according to the following formula:

$P = \frac{L \times 12000}{B}$ Newton (L and B in mm) F = 12000 Newton



Mast tie Part No.	L mm min. – max.	B mm
9069 193-080	min. 600 max. 850	500 – 950 600 – 900
9069 193-120	min. 850 max. 1250	700 – 1200 900 – 1100
9069 193-160	min. 1250 max. 1650	800 – 1500 1000 – 1300
9069 193-200	min. 1650 max. 2050	1100 – 1900 1400 – 1600

Tie distances – Mobile chassis

1st tie installed at 15 m **(50 ft.)** height.

Subsequent ties at max. 15 m **(50 ft.)** intervals.

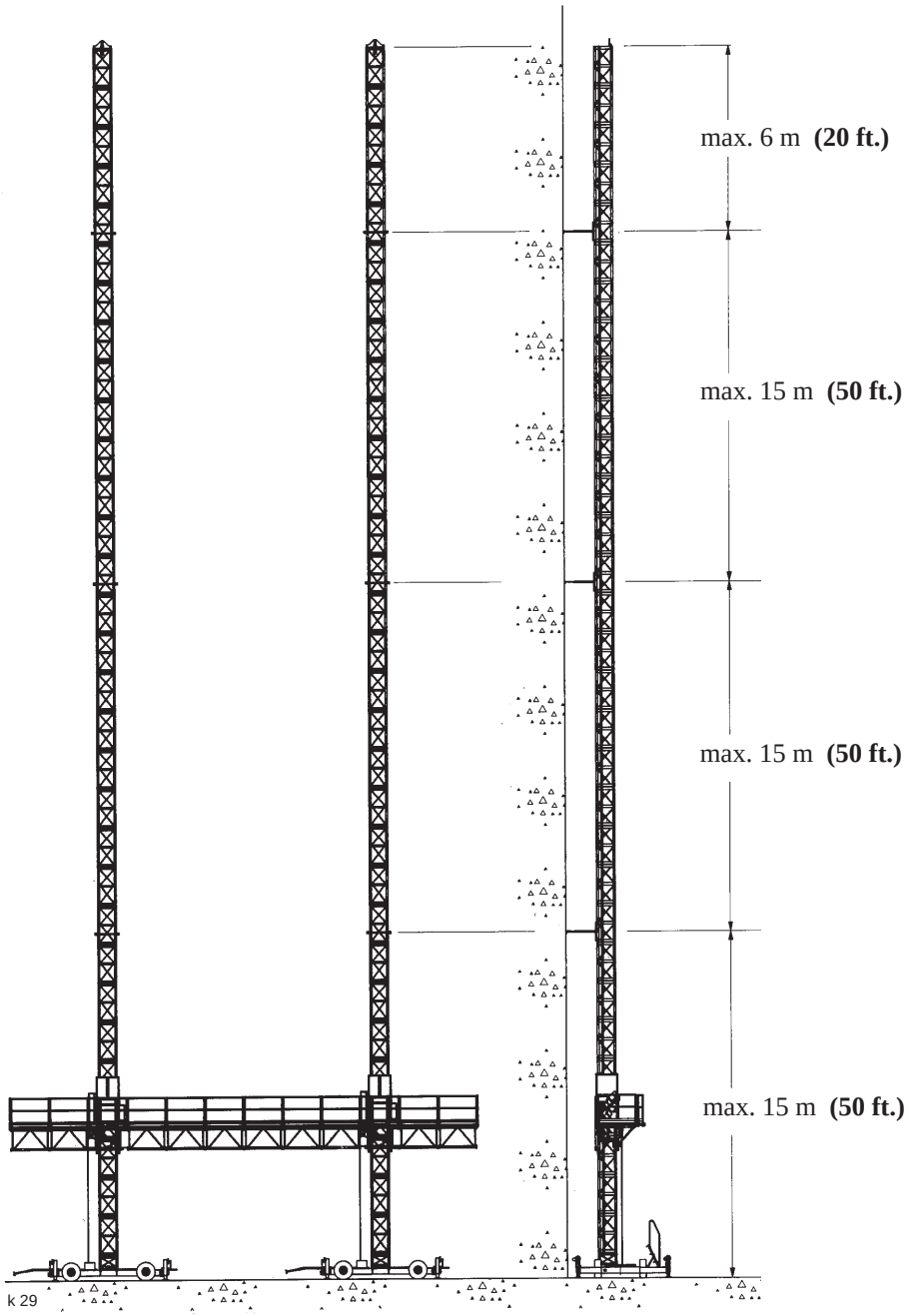
Max. overhang 6 m **(20 ft.).**

If the protective canopy is used:

1st tie installed at 9 m **(30 ft.)** height.

Subsequent ties at max. 9 m **(30 ft.)** intervals.

Max. overhang 6 m **(20 ft.)**.



Tie distances – Pedestal base

1st tie installed at 3 m **(10 ft.)** height.

2nd and 3rd at 6 m **(20 ft.)** and 9 m **(30 ft.)** intervals respectively.

Subsequent ties at 15 m **(50 ft.)** intervals.

Max. overhang 6 m **(20 ft.)**.

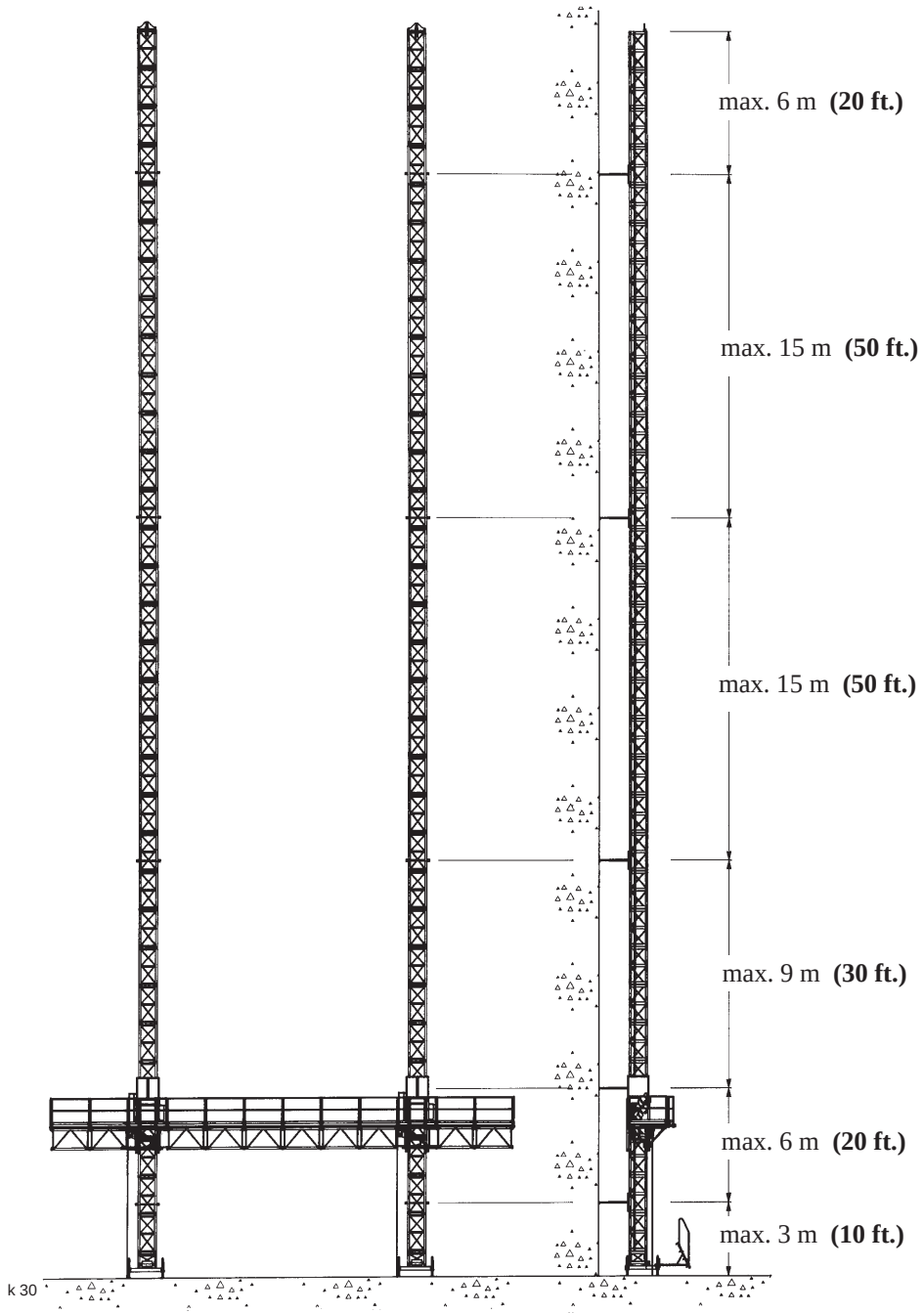
If the protective canopy is used:

1st tie installed at 3 m **(10 ft.)** height.

2nd tie installed at 6 m **(20 ft.)** interval.

Subsequent ties at max. 9 m **(30 ft.)** intervals.

Max. overhang 6 m **(20 ft.)**.



Installation of mast tie . . . . . K 1

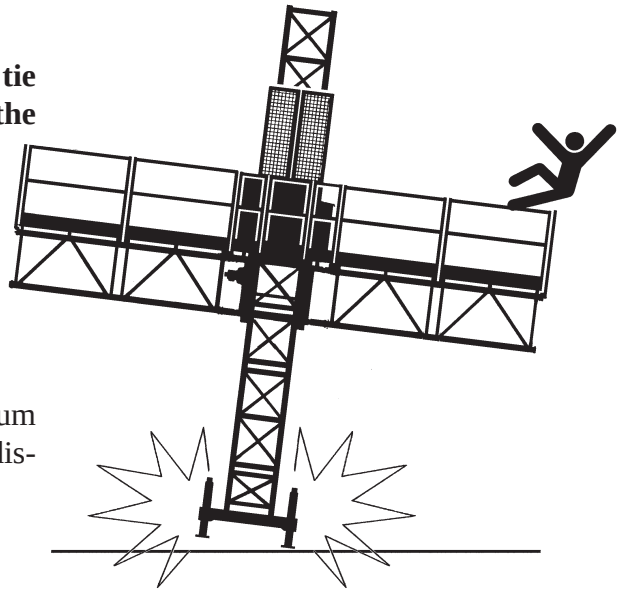
Installation and removal of mast tie

First ensure that the structure to be tied into can withstand the maximum reaction forces that can occur in the ties. This is the responsibility of the Owner/User.

Weather conditions

When installing and dismantling the ties the overhang must not be greater than the tie distance plus an additional 1.5 m **(5 ft.).** This only when the wind is not greater than 12 m/sec**. (27 mph)** and any load on the platform is evenly distributed on each side of the mast.

CAUTION: Install scaffold or similar equipment if tie cannot be installed from the platform or the structure due to excessive length.
Local safety regulations must apply.



CAUTION !

Tipping hazard with base pedestal.

Always dismantle the platform to a maximum transport length of 4.5 m **(15 ft.)** before disconnecting the lowest (1st) mast tie.

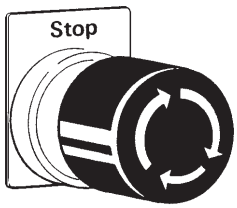
Will cause severe injury or death.

WARNING!

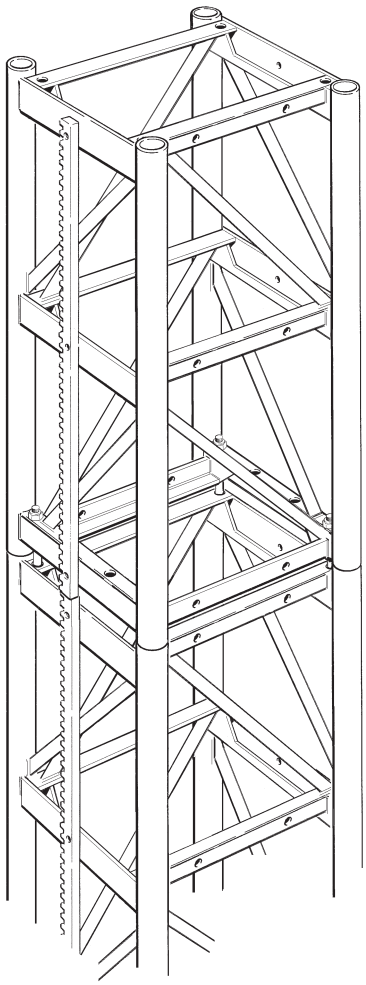
Unintentional moving.

Always depress the red "Emergency Stop"-button to prevent unintentional moving while work is carried out on the mast.

Can cause severe personal injury or death.



Turn the button to reset the switch.



Installation of mast tie

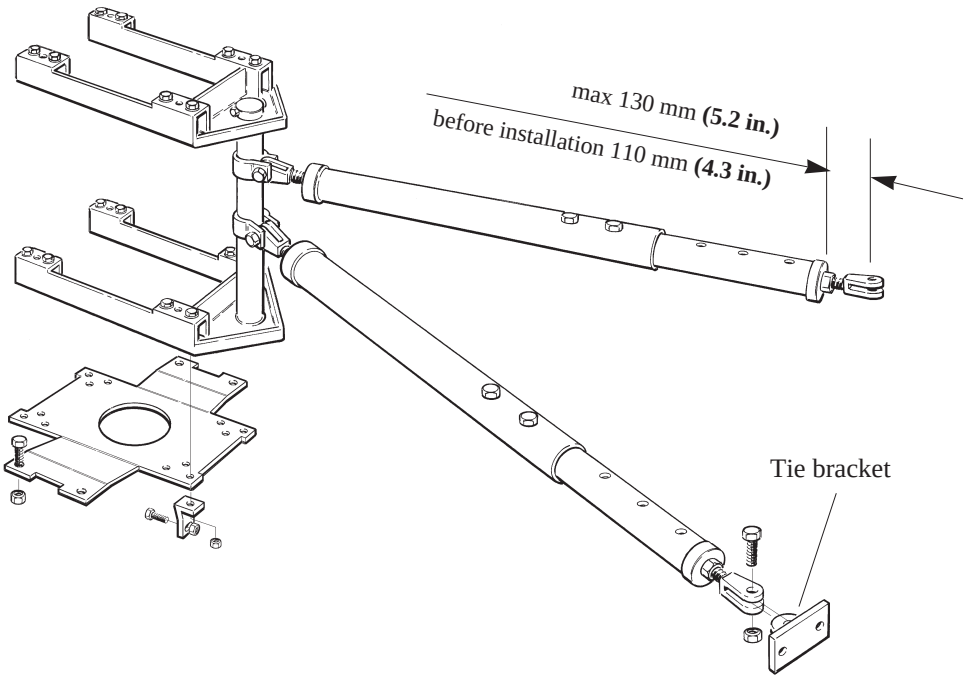
1. Install the adaptor plate and brackets inside the mast.
2. Attach the tie brackets.
3. Adjust the length of the tie pipes and install them with the erection crane or other lifting device.

   The pipe adjusting link screws must be screwed out to a length of approximately 110 mm **(4.3 in.)** before installation (See illustration).

   Maximum length of adjusting link screws 130 mm **(5.2 in.)**.
4. Straighten the mast. By adjusting the length of the tie pipes the mast can be turned or adjusted sideways.
5. Tighten all bolts and ensure that the platform clears the structure and the tie.

CAUTION: The maximum allowable horizontalinclination of the mast tie is up/down 5°, i.e. 88 mm/m (1.85 in./ft.).

This must never be exceeded.



Adjust the length of the tie pipes as close to the tie length as possible, moving the two pipes so that the holes coincide. Lock the pipes with bolts and lock nuts.

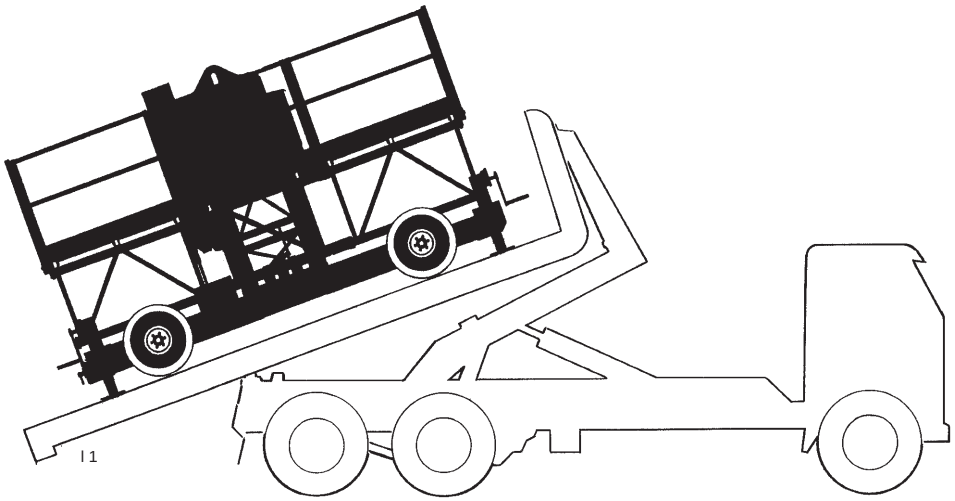
Adjust the length ± 40 mm **(1.6 in.)** by turning the link screws in or out. (Adjust equally on both sides). By adjusting the tie pipes, the length can be adjusted further – even after the tie pipe has been anchored into mast and wall (without having to remove the ends). Note that the link screws are mechanically ”secured” and cannot be screwed off.

Transportation on public roads ..... **L 1**
Towing of platform without mast ..... **L 1**
Towing with erected mast ..... **L 2**
Lifting with crane ..... **L 2**
Movement with self-powered machinery ... **L 3**

Transport and movement

The machine can be towed or moved by its own drive unit over short distances. For longer distances it is recommended that special transport vehicles be used. Only machine components, e.g. platform parts and mast sections can be left on the platform. The mast must always be dismantled during transportation on public roads.

Remember to always disconnect and remove the power cable before transportation.



Towing of platform without mast

The outriggers must be retracted completely and locked. The platform must also be lowered so that it rests on the rubber buffers.

Maximum allowable speed when towing is 20 km/h **(12 mph).**

When parked – always use the stop lugs to avoid unintentional movements.

When towing – be sure of that the machine is properly connected to the towing vehicle before the stop lugs are removed.

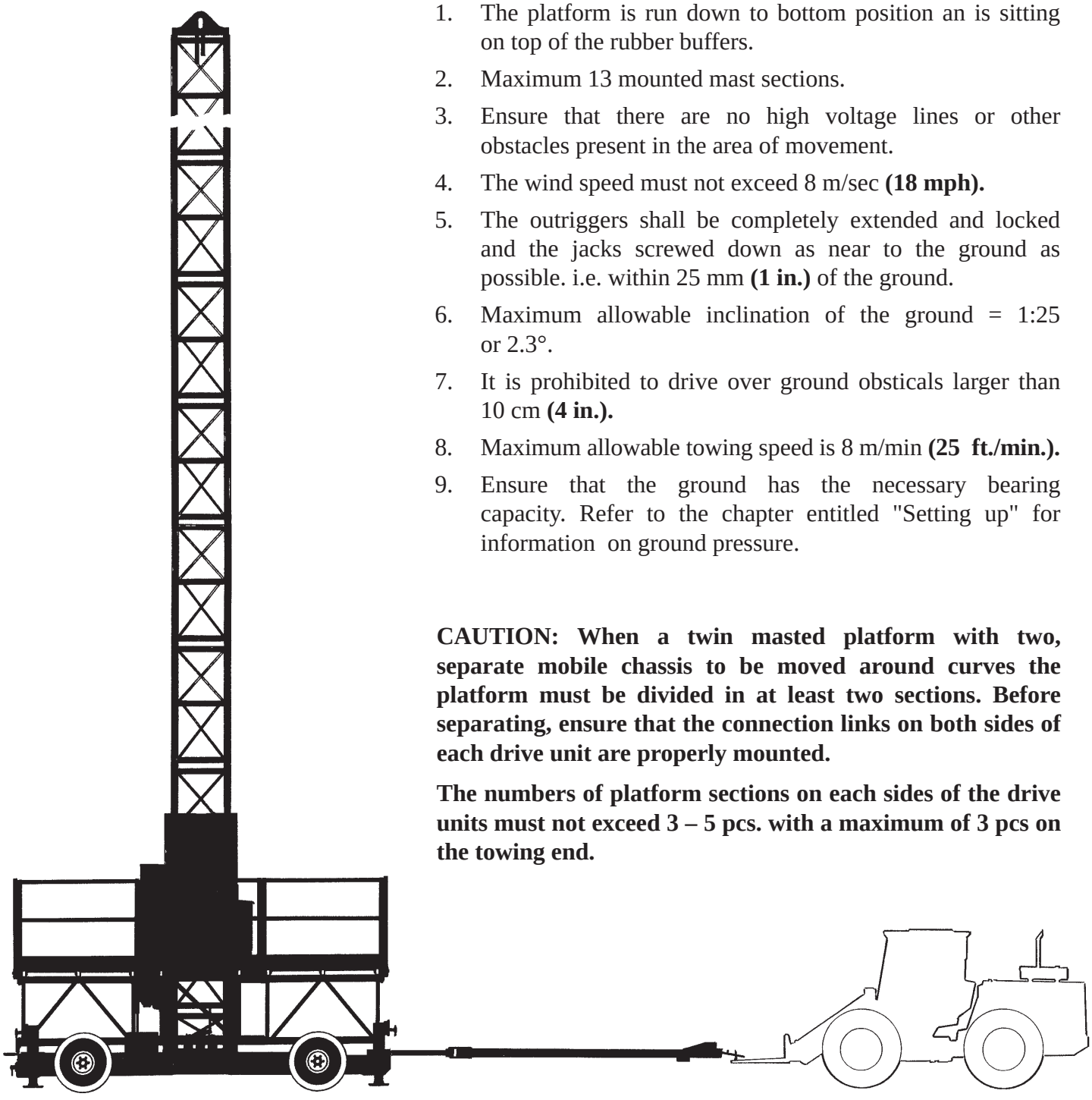
Towing of platform with erected mast on a mobile single or twin mast chassis

Platform with erected mast can be towed on the job site only if the following is observed:

1. The platform is run down to bottom position an is sitting on top of the rubber buffers.
2. Maximum 13 mounted mast sections.
3. Ensure that there are no high voltage lines or other obstacles present in the area of movement.
4. The wind speed must not exceed 8 m/sec **(18 mph).**
5. The outriggers shall be completely extended and locked and the jacks screwed down as near to the ground as possible. i.e. within 25 mm **(1 in.)** of the ground.
6. Maximum allowable inclination of the ground = 1:25 or 2.3°.
7. It is prohibited to drive over ground obsticals larger than 10 cm **(4 in.).**
8. Maximum allowable towing speed is 8 m/min **(25 ft./min.).**
9. Ensure that the ground has the necessary bearing capacity. Refer to the chapter entitled "Setting up" for information on ground pressure.

CAUTION: When a twin masted platform with two, separate mobile chassis to be moved around curves the platform must be divided in at least two sections. Before separating, ensure that the connection links on both sides of each drive unit are properly mounted.

The numbers of platform sections on each sides of the drive units must not exceed 3 – 5 pcs. with a maximum of 3 pcs on the towing end.



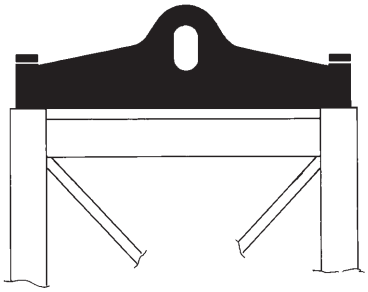
Lifting with crane

A 4.5 m **(15 ft.)** platform with mobile chassis (base unit) weighs approx. 5000 kg **(11000 lbs.)** including 13 mast sections.

A 4.5 m platform with mast pedestal (base unit) weighs approx. 3500 kg **(7700 lbs.)** including 13 mast sections.

With a suitable crane connected to the lifting yoke at the mast top, the platform with erected mast can be lifted with a crane. The lifting yoke is designed for a maximum load of 6000 kg **(13200 lbs.).**

The platform must be balanced.



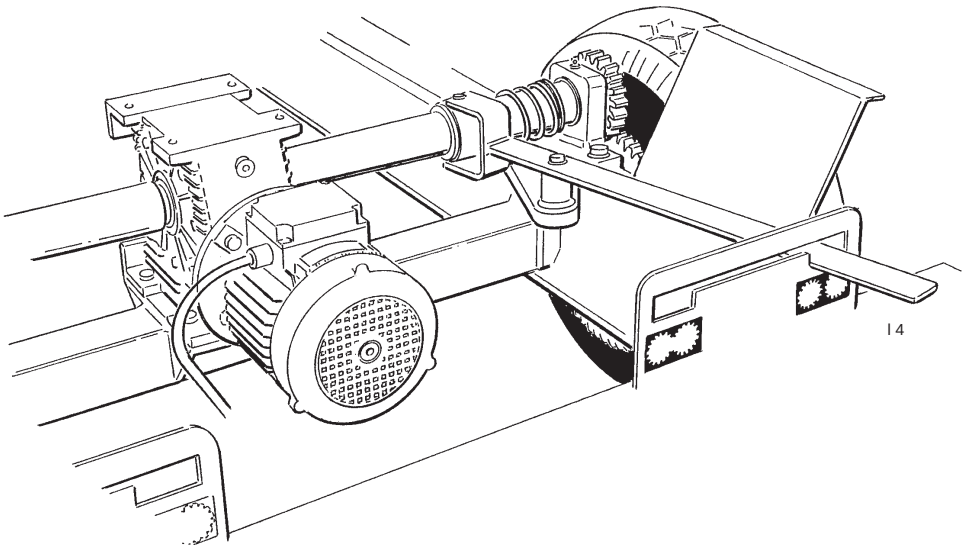
I 3

Horizontal movement with self-powered machinery

The mobile chassis for single mast platform can be provided with its own drive unit intended for moving over short distances on the job site. The platform with erected mast can be moved if the requirements under the heading “Towing of platform with erected mast” are fulfilled.

During transport no other load, other than platform parts and mast sections are allowed on the platform. The platform must be lowered to its bottom position and rest on the rubber buffers.

The drive wheels can be individually engaged and disengaged by means of two levers connected to the drive shaft.

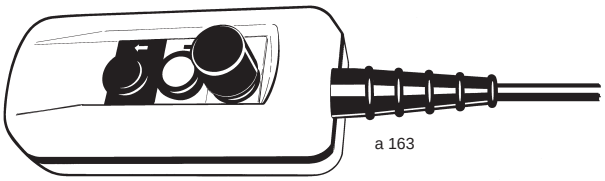


I 4

CAUTION: When driving around curves only ONE drive wheel is to be engaged as the drive wheels are not equipped with differential gearing.

L 4

To ensure that the work platfrom can not be operated while the self-powered machinery is used, the main power cable must be disconnected from the platform electrical M-panel and connected to the power connector of the self-powered machinery.



a 163

The drive unit is operated by pendant remote control with pushbuttons for Forward – Stop – Reverse. The buttons are of type ”hold to run”.

I 6

WARNING!

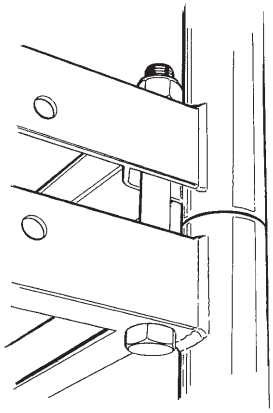
Kick-back hazard.

Always use the extra support wheel for the chassis tow bar and do not walk next to the tow bar.

Can cause severe personal injury.

Tightening torque

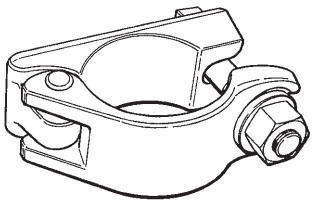
Recommendations according to the chart on the following page applies in general except for:



ALIMAK Mast bolt, dim. 1 ”UNC

– Torque : 350 Nm **(258 lbf x ft)**

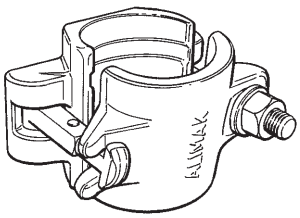
– Spanner size : 1 1/2”



ALIMAK Scaffold clamp Ø 76 mm

– Torque : 150 Nm **(110 lbf x ft)**

– Spanner size : 28 mm



ALIMAK Scaffold clamp Ø 76 mm

– Torque : 220 Nm **(163 lbf x ft)**

– Spanner size : 24 or 27 mm

Recommended torques

The chart applies to galvanized screw and nut of strength class 8.8 – dry surface.

Dimension	Spanner size	Torque	
M 6	10 mm	10 Nm	**(7 lbf x ft)**
M 8	13 mm	24 Nm	**(18 lbf x ft)**
M 10	17 mm	47 Nm	**(35 lbf x ft)**
M 12	19 mm	81 Nm	**(60 lbf x ft)**
M 14	22 mm	128 Nm	**(95 lbf x ft)**
M 16	24 mm	198 Nm	**(146 lbf x ft)**
M 20	30 mm	385 Nm	**(285 lbf x ft)**

ASSEMBLY CONTROL – CHECK LIST

The assembly is to be carried out by trained/authorized personnel only.

Please mark with a cross to the right to confirm that:

	Yes
1. the installation as in accordance with the latest instruction manual as it pertains to:	
a) Foundation for outriggers.	☐
b) That the outriggers are extended and locked.	☐
c) The length of the platform.	☐
d) The platform´s widening regarding performance and choice of material.	☐
e) Safety railings.	☐
f) Mast ties.	☐
2. the load sign agrees with the actual installation (see Instruction Manual).	☐
3. all signs are legible (see Instruction Manual).	☐
4. visual inspection is carried out regarding mechanical damages on structural parts such as;	
a) Outriggers with jacks.	☐
b) Chassis.	☐
c) Platform.	☐
d) Extending parts.	☐
e) Machinery frame with machinery.	☐
f) Mast.	☐
g) Mast tie.	☐
5. mast protection is installed.	☐
6. service and maintenance is carried out according to latest Instruction Manual.	☐
7. drop test is performed.	☐
8. test run and inspection is performed on:	
a) Limit cams in mast top.	☐
b) Limit cams at ground landing.	☐
c) Stop button(s).	☐
d) Gate switch.	☐
e) Horizontal levelling device – on twin mast installation.	☐
f) No obstacles within the working area of the platform. (There MUST NOT be any obstacles).	☐
9. test sliding is carried out.	☐
10. Check that:	
a) there is an Instruction Manual/Operator's Manual in the documentation box.	☐
b) there are cranking tools in the box.	☐
c) there are sliding tools.	☐
11. Check that the area is barricaded and a sign displaying "Working Area" is in place.	☐
12. Check that the user has received information about safety and operating instructions, service and maintenance.	☐